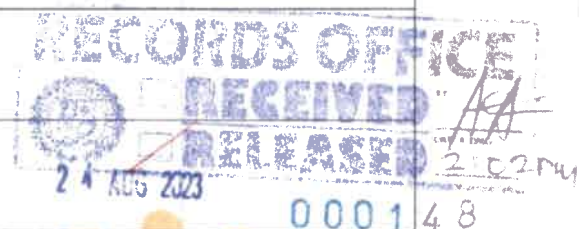




PROJECT PROPOSAL

1.	Title of the Project: ISIP River Restoration: Alleviating the Quality and Quantity of life on Freshwater Ecosystem Program
2.	Location: Sapang Balen, Mabalacat City, Pampanga
3.	Date/ Duration: The project will span twelve (12) months.
4.	Rationale of the Project (brief description of the situation): This research proposal revolves around the assessment and restoration of Sapang Balen, Mabalacat City, Pampanga with the implications targeted on SDG Nos: 2 (Zero Hunger), 6 (Clean Water and Sanitation), 14 (Life Below Water), and 17 (Partnerships for the Goals). This local water system of Mabalacat City is vulnerable to the persistent pollution generated by the surrounding residential and business areas. A series of strategies are to be applied for the health assessment and restoration of the rivers. Specifically, the physical, chemical, and biological tests are crucial in identifying the specific problems of the rivers. The data from these assessments will be utilized to formulate the next procedures for addressing the identified issues. The subsequent strategies will then be tested and utilized as interventions for the promotion of sustainability, and for policymaking.
5.	Type of Community Project: Environmental Protection
6.	Department Involved Institute of Arts and Sciences
7.	Project Leader and Coordinator: Marilyn S. Arcilla, RN, LPT, MAN <i>IAS, Dean</i> Glen S. Nolasco, Ms.Sci <i>BSBiology, Program Head</i>
8.	Implementers: Project leader Marilyn S. Arcilla Coordinator Glen S. Nolasco IAS Faculty
9.	Cooperating Agencies: Mabalacat City LGU, CENRO
10.	Target Beneficiaries: Mabalacat City Community





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11	Total Cost of the Project: See the Appendix 1
12	Objectives (General and Specific): The main goal of this project is to alleviate the quality and quantity of life of fauna and flora on freshwater ecosystems.
13	Financial Plans, Sources of Fund: Source of Fund is Mabalacat City CENRO
14	Functional Relationships with the Collaborating Agencies: CENRO is a duly recognized Department of LGU that protects the environment, strict enforcement of existing laws concerning the environment, and balances the ecology for sustainable resource and development. CENRO, instituted a stream restoration program for Sapang Balen under the City's jurisdiction. The department presents its commitment to environmental conservation and sustainable practices of local land and water areas. CENRO with its responsibility for the preservation and development of the natural resources within Mabalacat City, has agreed to provide support to the stakeholders of MCC in the form of funding, training, and other operations and latest developments of the restoration project.
15	Monitoring and Evaluation Mechanics: See the Appendix 2
16	Plans for Ensuring the Sustainability of the Project: See the Appendix 3
17	SDGs SDG Nos: 2 (Zero Hunger), 6 (Clean Water and Sanitation), 14 (Life Below Water), and 17 (Partnerships for the Goals).

Prepared by:


JENNY LOU P. ATIENZA, LPT
IAS, Instructor

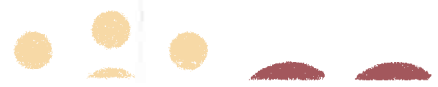
Noted by:


MARILYN S. ARCILLA, RN, LPT, MAN
IAS, Dean


GLEN S. NOLASCO, Ms.Sci
BSBiology, Program Head

Approved:


CAROL R. ARBOLEDA, LPT, MAEd
Kayantabe Manager





APPENDIX 1

GANTT CHART

Below is the chronological order of each activity to be undertaken throughout the course of the project:

Activities/Conduction	Year 1			
	1st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
Inception Meeting and MOA Signing				
Search for sponsorship/funds				
Occular visit of the study area				
SOP #1: Phase 1				
SOP #2: Authentication of the flora and fauna.				
SOP #3: Laboratory Test				
SOP #4: Interventions and Installation				
SOP #5: Implementation				SUSTAINABILITY





APPENDIX 2

Preliminary Assessment of the Physical, Chemical, and Biological Status

The following are the preliminary assessments to be conducted on collected water samples.

- **Physical-** Watershed mapping will be done in the waterway using the guide of Bell and Cook (2011). The features of the study areas will be described and illustrated.
- **Chemical-** All the physicochemical parameters will be considered in both rivers, such as temperature, pH level, dissolved oxygen, suspended particles, and salt content.
- **Biological-** All species of flora and fauna will be collected in the study areas. All samples will be kept and preserved based on the protocols of the National Museum and University of the Philippines Los Banos and maintained in ideal condition for authentication.

Potability Tests

All water samples obtained from head stream, middle stream, and downstream of Sapang Balen will be analyzed in terms of total coliform and fecal coliform (CFU/100ml). In addition, water samples obtained will be subjected to heavy metal analysis. Moreover, water samples from both rivers will be analyzed for the presence of microplastics.

Phytoremediation using Aquatic Macrophytes

Freshwater macrophytes will be propagated in different areas of the rivers following the protocol of Akhtar, Yasar, and Irfan (2017).

Application of Activated Carbon

The procedure on the generation and application of plant-based activated carbon will be adopted from the paper of Dicuango (2023).

Charcoal Briquettes Derived from Water Hyacinth. The protocol for charcoal briquettes derived from water hyacinth will be adopted from Carnaje, Talagon, Peralta, and Shah (2018); Rezania, Din, Kamaruddin, and Taib (2016). Samples of this plant will be air dry and processed in the laboratory of Tan Trao University. All samples will be stored in the ideal condition prior to calorimeter test.

Calorimetry Test

Equipment that will be utilized in this study will be conducted from Tan Trao University to verify the energy transfer of the samples.

Installation of Alternative Revetment

Installation and creation of modified filter revetment will be guided by the paper of Pilarczyk (2010). Simulation of river and installation of revetment will be conducted in the laboratory of Tan Trao prior to installation of alternative revetment on Sapang Balen.

Application of Bio flocculants

Plant-based flocculants will be administered following the guide of Das, Ojha, and Mandal (2021).



APPENDIX 3

River Restoration: Alleviating the quality and quantity of life on Freshwater ecosystem

MAINTENANCE AND OTHER EXPENSES (MOOE)

Item	Unit of Issue	Item Description	Quantity	Estimated Unit Cost	Estimated Cost
Physical Assessment					
1	Unit	pH Meter	1	2,500	2,500
2	L	Premium Gasoline (Grasscutter)	20	60	1,200
3	unit	Bush cutter	3	3,000.00	9,000.00
Microplastic Assessment					
4	Unit	LABALPHA 200 Mesh Lab Sieves, Test Sieve #200 Mesh, 4" Diameter, 304 Stainless Steel Wire Cloth (0.075mm)	1	1,650	1,650
5	Unit	Digital Professional Trinocular Stereo Zoom Microscope WF20X Eyepieces	1	25,000	25,000
6	L	Hydrogen peroxide solution (30% concentration) (500mL.) Sigmaandrich**	1	11,000	11,000
Chemical Parameters (Lab Tests)					
7	Lab test	Ammonia	9	440	3,960
8	Lab test	Phosphate	9	600	5,400
9	Lab test	Total Dissolved Solids	9	400	3,600
10	Lab test	Color	9	250	2,250
11	Lab test	Turbidity	9	220	1,980
12	Lab test	Arsenic	9	850	7,650



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13	Lab test	Cadmium	9	850	7,650
14	Lab test	Lead	9	850	7,650
15	Lab test	Mercury	9	670	6,030
16	Lab test	Copper	9	850	7,650
17	Lab test	Oil and Grease	9	660	5,940
18	Lab test	Total Coliform	9	900	8,100
19	Lab test	Heterotrophic Plate Count	9	400	3,600
20	Lab test	Thermotolerant/ E. coli	9	1050	9,450
21	Lab test	Dissolved Oxygen	9	300	2,700
22	Lab test	Biological Oxygen Demand	9	750	6,750
23	Lab test	Free Cyanide	9	850	7,650
24	Lab test	Surfactants	9	800	7,200
25	Lab test	Metal Preparation	9	250	2,250
Briquettes Derived from Congo Grass Parameters					
26	Lab test	Proximate analysis	3	1,990	5,970
27	Lab test	Ash	3	840	2,520
28	Lab test	Moisture	3	450	1,350
29	Lab test	Volatile Combustible Matter	3	700	2,100
30	Lab test	Fixed Carbon	3	1,990	5,970
31	Lab test	Heat Value	3	1,500	4,500
				TOTAL	180,220.00 PHP





MABALACAT CITY COLLEGE

INSTITUTE OF ARTS AND SCIENCES

August 1, 2023

CAROL R. ARBOLEDA, LPT, MAEd
Kayantabe Manager
Dolores campus, Mabalacat City College

Dear Ma'am President,

On behalf of the Institute of Arts and Sciences, I would like to request your approval to extend our project to the community of Mabalacat City, Pampanga. Institute of Arts and Sciences proposed a project entitled ISIP River Restoration: Alleviating the Quality and Quantity of life on Freshwater Ecosystem Program. The aim of the project is to restore both aquatic and terrestrial ecosystems of diverse organisms and improve the water quality for the health and safety of the residents of Mabalacat City and its neighboring community. The project was pre-launched on June 26, 2023, and was led by IAS dean Marilyn S. Arcilla and coordinator of the project, Glen S. Nolasco together with the IAS faculty, AB History, and BS Biology students.

The activity was coordinated with the barangay official of Barangay Poblacion, Mabalacat City for a well-organized event. The pre-launching has been successful and productive, BS Biology students conducted biodiversity activity to collect samples of both fauna and flora that are present in the area. Sample water from the stream was submitted to the CRL testing facility for water quality testing. And authentication of the sample specimens is expected to be accomplished on or before August 21, 2023. The project is open for suggestions and further revision.

Hence, with the success of the pre-launching event, we would like to request your permission to pursue the extension of the community project for lifelong sustainability. We are hoping for your consideration, and we are looking forward to your feedback. Thank you for your time and God bless!



24 AUG 2023

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MABALACAT CITY COLLEGE

INSTITUTE OF ARTS AND SCIENCES

Prepared by:

JENNY LOU P. ATIENZA, LPT

IAS, Instructor

Noted by:

MARILYN S. ARCILLA, RN, LPT, MAN

Dean, IAS

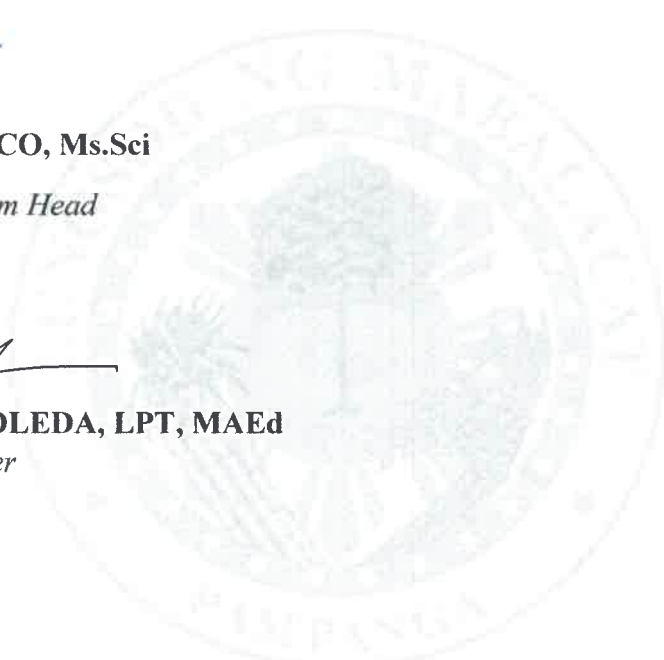
GLEN S. NOLASCO, Ms.Sci

BSBiology, Program Head

Approved:

CAROL R. ARBOLEDA, LPT, MAEd

Kyantabe Manager





Republic of the Philippines
 Province of Pampanga
 Mabalacat City



MABALACAT CITY COLLEGE

REQUEST FOR RECORDS AND ARCHIVES DOCUMENT

Records Form No. 1

JUNE 19, 2023
 Date

Name of Requester : PIAZ, DARREN C.
 Unit : INSTITUTE OF ARTS & SCIENCES

Document Requested : PIP PROJECT - RIVER RESTORATION PROJECT

Date of Document : 2023

Purpose : NEED FOR FILING
 HARD COPY SOFT COPY VIEW

[Signature]
 Signature of Requester

Action Taken:

Approved Hard Copy
 Soft Copy
 View

Disapproved
 Reason: _____

[Signature]
 Anthony C. Anunciacion
 Records Officer