

ANALYSIS OF LEAD AND CADMIUM CONCENTRATIONS ON SEDIMENTS AND WATER OF YLANG YLANG RIVER IN DASMARIÑAS CITY AS AN INPUT FOR LOCAL **GOVERNMENT UNIT ENVIRONMENTAL PROTECTION PROGRAM**

> A Thesis Presented to College of Science and Computer Science Graduate Studies Department De La Salle University – Dasmariñas Dasmariñas City, Cavite

In Partial Fulfilment of the Requirements for the Degree Master of Science in **Environmental Science**

> Jean Rose Ang-oay Esguerra March 2014



ABSTRACT

The concentration of the lead (Pb) and cadmium (Cd) in the water and sediments of Ylang Ylang River in Dasmariñas City were evaluated by comparison with the set standard by Environmental Management Bureau-Department of Environment and Natural Resources for water, and US Environmental Protection Agency, Region 5 for sediments.

The water and sediments samples were collected from the eight sampling stations and substations, starting from downstream to upstream area. Both water and sediments samples were prepared and analyzed in the laboratory for Pb and Cd concentration using Atomic Absorption Spectrometer.

The results showed concentration of Cd both in the water and sediments of the river are within the standard and guidelines. Station 1 and Station 7b show concentration of Pb in water that exceeds set standard while all stations are rated as heavily polluted in sediments as per proposed guidelines.

Both Station 1 and 7b were associated to the existing land use near the river that directed the non-point source of contamination of Pb from discharge coming from domestic and industrial source. Suggested action plan was included in the study to address the threat and prevent further contamination that would manage to attain sustainability of the river.



De La Salle University - Dasmariñas

Title Page1Abstract2Approval Sheet3Acknowledgements4Table of Contents5
Abstract2Approval Sheet3Acknowledgements4Table of Contents5
Approval Sheet3Acknowledgements4Table of Contents5
Acknowledgements 4 Table of Contents 5
Table of Contents 5
INNI DO - INFORMATION
Chapter 1 INTRODUCTION
1.1 Background of the Study 9
1.2 Objective of the Study 14
1.3 Significance of the Study 15
1.4 Scope and Limitations16
Chapter 2 METHODOLOGY
2.1 Research Design 18
2.2 Research Setting 19
2.3 Research Procedure 21
2.4 Data Gathering and Statistical Analysis 24
Chapter 3 RESULTS AND DISCUSSION
3.1 Data and Results of Heavy Metal Analysis 26
3.2 Mapping and Non-Point Source Determination 35
3.3 Suggested Action Plan40
3.3 Suggested Action Plan40

5

De La Salle University - Dasmariñas

Chapter 4	4 SUMMARY, CONCLUSIONS AND RECOMMENDAT	IONS		
Su	immary	48		
Co	onclusions	50		
Re	ecommendations	53		
CITED REFERENCES				
APPENDICES				
A.	Map of the Study Site	59		
В.	19 Priority River for BOD and DO Parameters	62		
C.	Physico-chemical Analysis of Ylang Ylang River	63		
D.	BOD and DO at the Five Sampling Stations Along			
	Ylang Ylang River	64		
E.	Standard for Class C River	65		
F.	Raw Data	66		
G.	Statistical Analysis	68		
H.	Photo Documentation	71		
CURICULUM VITAE				

De La Salle University - Dasmariñas

LIST OF TABLES

Table		Page
1	Average Concentration of Pb and Cd in the Waters and	
	Sediments of Ylang Ylang River from the Different Sampling	
	Stations Collected on May 2013 and Analyzed using AAS	26
2	EMB-DENR Water Quality Standard for Class C Water	28
3	United States Environmental Protection Agency, Region 5	
	Proposed Guidelines for Sediment (mg/kg dry weight)	29
4	Sieve Result of Sediment Samples from Ylang Ylang River	
	along Dasmariñas City using Sieve Plate No. 10	30
5	Summary of the Mean Concentration of Cd and Pb in the	
	Water and Sediments Between Stations and Substations	
	along Ylang Ylang River using Tukey HSD Post Test	34
6	Land Use along Ylang Ylang River	36
7	Suggested Environmental Programs and Strategies	37

