# WATER AUDIT: EVALUATION OF WATER CONSUMPTION IN SELECTED BUILDINGS AT CAVITE STATE UNIVERSITY MAIN CAMPUS (CLUSTER III)

THESIS

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# ABSTRACT

**Delgado, Lance Adrian R. and Martinez Isaiah Christopher T. Water Audit: Evaluation of Water Consumption in Selected Buildings at Cavite State University – Main Campus (Cluster III).** Bachelor of Science in Civil Engineering. Cavite State University, Indang, Cavite. June 2019. Adviser: Engr. Larry E. Rocela.

Water auditing is a process wherein the water flows and quality is quantified in simple or complex systems, with a view to reduce water usage and unnecessary water use. The water audit was conducted at the College of Engineering and Information Technology Building, Department of Industrial Engineering and Technology Building, Physical Plant Services Building, University Infirmary Building and the College of Criminal Justice Building at Cavite State University – Main Campus The study was conducted from December 2018 to March 2019 at Cavite State University.

The study addressed the need of Cavite State University on installing water meter and gate valve on each building as well as conserving ground water. This project aimed to calculate the approximate water consumption rate, water losses rate and percentage of losses of the selected buildings. The water audit was conducted as per the past thesis derived from the water audit methodology of the American Water Works Association (AWWA).

The main objective of the study was to conduct water audit in selected buildings at Cavite State University – Main Campus. Specifically, determine the rate of losses and consumption rates; develop the most efficient water plan for the selected buildings; identify and measure the specific locations of water losses; determine the causes of these losses; and develop the most effective and economical water plan to mitigate these losses.

The study provided floor plans, plumbing layout, water losses markings, along with the water meter readings, graphs of water losses and consumption rates and their equivalent price in current water meter pricing in Indang, Cavite (See Appendix 1, Tables 1-5 for water meter readings. Appendix 1, Tables 6-10 for water consumption and losses rates. Appendix 1, Tables 16 and 17 for summary) (See Appendices 3, 5, and 6 for the water losses and consumption graph, water evaluation form and efficiency plan, cost estimates)

The total amount of the pipes, fittings and fixtures recommended for replacement estimates is P 163,028.14 (See Appendix 6).

After the analysis and computations, the selected buildings were proven to have an average scenario of losses (1 to 30 percent). The researchers recommended the general repairs on the Department of Industrial Engineering and Technology and College of Criminal Justice building because faulty fixtures high value of losses. The researchers recommended the water audit of remaining buildings of Cavite State University – Main Campus.

The design project conducted could be used by other researchers as reference of procedure to conduct water audit.

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# WATER AUDIT: EVALUATION OF WATER CONSUMPTION IN SELECTED BUILDINGS AT CAVITE STATE UNIVERSITY MAIN CAMPUS (CLUSTER III)

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## INTRODUCTION

Water is an unavoidable phenomenon that is present in all built infrastructures. It is essential for the users to utilize water resources in a careful and efficient manner to account this problem. Water audits provide a rational, scientific framework that categorizes all the water use in the system. It is an important tool for efficient water management. It will help identify the proper procedures and actions to minimize the losses through regular inspections to save water as well as energy consumption.

Apart from the multiple sources of freshwater, Cavite State University – Main Campus has its own water supply system from groundwater source that supply the whole University without relying to the supply and services provided by municipal water district of Indang. Groundwater is the water found underground in the cracks and spaces in soil, sand and rock. It is stored in and moves slowly through geologic formations of soil, sand and rocks called aquifers. The water in the University is used for variety of purposes including Agriculture, also used in Industrial as it is used to supply the university's projects