

DECLARATION

**INVESTIGATION OF WATER QUALITY
CHANGES IN TRANSMISSION LINES FROM
SOURCES TO USER**

A dissertation submitted to the
Faculty of Science and Technology
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Degree of Bachelor of Science

By

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Abstract

The study was conducted to determine the extent and nature of water quality problems originating in water distribution systems in the Badulla municipal council. The role of microorganisms in the mediating chemical changes were observed and determined in distribution systems to improve public health and decrease disease burden.

Twenty four tap water samples were collected randomly from Badulla municipal area (after the distribution) and three samples were collected from storage tank (before distribution) between January and May, 2012. Analysis was done from January 2012 to June 2012 for important chemical and biological parameters such as Residual chlorine (RCL), Electrical Conductivity (EC), pH, Iron (Fe), Managanese (Mn), Dissolved Oxygen (DO), Total coliform.

The RCL concentration was determined using the Iodimetric titration method. The pH and EC of the collected water samples were digitally measured by using pH meter and conductivity meter respectively. Atomic absorbance spectroscopy (AAS) was used for heavy metal analysis. Azide modification of the Iodimetric method was used for determination of the concentration of DO.

For Biological analysis Most Probable Number (MPN), Streak plate isolation methods were done. Gram staining technique for bacterial identification and Pour plate method for colony counting were done.

Based on the results of MPN test, Fe and Mn concentration and colony counting in randomly selected water samples have higher values than the storage tank samples. From the DO and RCL test, through the distribution system from storage tank DO and RCL concentrations mostly decreased than the storage tank sample because of the microorganisms. According to the gram staining technique mostly gram negative round and rod shaped bacteria were observed through the microscope.