

TABLES OF CONTENTS

SHEET STATEMENT OF ORIGINALITY	i
APPROVAL SHEET	ii
ABSTRAK	iii
ABSTRACT	iv
FOREWORD	v
TABLES OF CONTENTS.....	vi
LIST OF FIGURES	ix
LIST OF TABLES	xi
GLOSSARY OF TERMS	xii
CHAPTER I INTRODUCTION.....	1
I.1 Background.....	1
I.2 Problem Statement.....	3
I.3 Research Objectives.....	3
I.4 Research Scope	3
I.5 Research Benefit	4
I.6 Report Systematic	4
CHAPTER II LITERATURE REVIEW.....	6
II.1 Spillway	6
II.2 Internet of Things.....	7
II.3 ESP32.....	9
II.4 Raspberry Pi 3.....	11
II.5 Actuator.....	12
II.6 Sensor.....	14
II.7 Long Range (LoRa)	15
II.8 Unified Modeling Language (UML)	16

II.8.1	Use Case Diagram.....	17
II.8.2	Activity Diagram.....	17
II.8.3	Sequence Diagram	18
II.9	Blackbox Testing	18
II.10	Tools	19
II.10.1	Arduino IDE.....	19
II.10.2	Putty	19
II.11	Prototype Methodology	20
II.12	State of the art	21
CHAPTER III	RESEARCH METHODOLOGY	29
III.1	Problem Solving Framework	29
III.2	Problem Solving Systematics	29
III.2.1	Communication	30
III.2.2	Quick Plan.....	30
III.2.3	Modeling Quick Design	30
III.2.4	Construction of Prototype	30
III.2.5	Deployment Delivery & Feedback.....	30
III.3	Data Collection	31
III.4	Evaluation Methods	31
III.5	Reason for Selection of Method	31
CHAPTER IV	ANALYSIS AND DESIGN	32
IV.1	System analysis.....	32
IV.1.1	Problem analysis	32
IV.1.2	Solution analysis	32
IV.1.3	Materials and Equipment	33
IV.2	System Design	36

IV.2.1	Design of Use Case Diagram	37
IV.2.2	Design of Activity Diagram	38
IV.2.3	Design of Sequence Diagram.....	50
IV.2.4	Block Diagram	60
CHAPTER V	IMPLEMENTATION AND TESTING	61
V.1	Implementation	61
V.1.1	Error Performance	62
V.2	Testing.....	63
CHAPTER VI	CONCLUSION AND SUGGESTION.....	65
VI.1	Conclusion	65
VI.2	Suggestion.....	66
REFERENCES.....		67