

## Table of Contents

Dedication.....	I
ACKNOWLEDGMENTS .....	II
Abstract.....	III
الملخص.....	V
Table of Contents .....	VII
List of Figures.....	IX
List of Tables.....	X
Abbreviations .....	XI
<b>Chapter One: Introduction.....</b>	<b>1</b>
1.1. Introduction .....	1
1.2. Objectives .....	3
1.3. Justification.....	3
<b>Chapter Two: Literature review .....</b>	<b>5</b>
2.1 Introduction .....	5
2.2 Definition of non steroidal anti inflammatory Drugs .....	6
2.2.1 Ibuprofen .....	7
2.2.3 Diclofinac .....	9
2.2.4 Carbamazepine .....	13
2.3 Source of Pharmaceutical in Environment.....	18
2.4 Removal in WWTP .....	19
2.5 General description of Wadi Al Qilt drainage basin Study area .....	21
2.5.1 Study area location .....	21
2.5.2 Metrological Data.....	22
<b>Chapter Three: Methodology .....</b>	<b>23</b>
3.1 Personal communications and interviews .....	23
3.2 Field work.....	23
3.3 Sampling Time and Site .....	23
3.4 Field analysis and wet chemistry.....	25
3.5 Sample Collection .....	26

3.6 Sample bottles .....	26
3.7 Sample Volume .....	26
3.8 Preservative .....	26
3.9 Filtration .....	26
3.10 Sample Storage .....	27
3.11 Water analysis.....	27
<b>Chapter Four: Result and Discussion.....</b>	<b>28</b>
4.1 General.....	28
4.2 Effect and Risk of pharmaceuticals .....	41
4.3 Effect of target pharmaceuticals on groundwater.....	44
4.4 Conclusion .....	45
4.5 Recommendations .....	46
<b>References.....</b>	<b>47</b>