# APPLICATION OF SPATIAL DECISION SUPPORT SYSTEM IN LOCATING POSSIBLE AREA FOR A LANDFILL SITE IN PETALING JAYA, SELANGOR DARUL EHSAN

## NOORIMAH BINTI MOHD MUSTAFFA

# THESIS IS SUBMITTED IN PARTICULAR FULFILMENT FOR THE DEGREE OF BACHELOR OF SCIENCE (HONS) IN INTELLIGENT SYSTEM

# FACULTY OF INFORMATION TECHNOLOGY AND QUANTITATIVE

### SCIENCES

# MARA UNIVERSITY OF TECHNOLOGY

2004

#### ACKNOWLEDGEMENT

In The Name of Allah, The Most Gracious And The Most Merciful. There is no word to say except thanks to HIM for giving me the opportunity to complete my final year project successfully.

First of all, thanks to Dr. Azlinah Binti Mohamed for her guidance and very valuable advice to me in order to complete this project within the estimated time.

Not to forget, I would like to express my sincere gratitude to my supervisor, Puan Jamaliah Binti Taslim with her advice and support during the development of this system and thank for her comments, guidance and suggestion on this project.

Besides, this appreciation is highly dedicated to some of professional groups that have giving a good cooperation to me during interview session in order for me to get related information. They are:

- Mr. Nor Esa B. Sahid, senior officer from Healthy Department, Shah Alam Municipal Council (MBSA)
- Mr. Azam B. Talib, landfill operation manager from WORLDWIDE Landfill Sdn. Bhd
- Professor Madya Dr. Wan Naim B.Wan Mohd, lecturer from Faculty of Science Surveying and Geometic

- Miss Nurmiza Binti Ahmed Zulkifli, student Of Master in Geographical Information System GIS)
- Mr. Kamarul Azhar Bin Ahmad Syukri, student from Faculty of Science Surveying and Geometic
- Tuan Haji Jamaludin Bin. Haji Iskandar, senior officer from Healthy Department, Petaling Jaya Municipal Council (MPPJ)

This appreciation is also for all lecturers, students and even individual who are contributing their idea and give a warm cooperation either directly or indirectly during the development of this system.

Finally I want to thanks my family especially for my beloved mother, Mrs. Che Unah Binti Md. Aris, who have supported me all the way from the beginning until the successful completion of this project.

Thank you and May Allah bless all of you.

### ABSTRACT

This paper presents a computer-based system that can aid decision makers make the right and reliable choice on the selection of landfill sites in Petaling Jaya, Selangor Darul Ehsan. The analytical technique, proposed here, will help professionals such as engineers, town planners and municipal council especially to properly zone an area for a specific use. The system is called Spatial Decision Support System (SDSS). Spatial Decision Support System is found effectively to solve the problem in location and allocation. Locating the possible locations for a landfill site with manual method is very tedious and has become increasingly difficult. The first chapter discusses the introduction on what this paper is all about. It consists of research background, problem description, project objective, project scope and project limitation. The second chapter will discuss about Spatial Decision Support System (SDSS) and Geographical Information System (GIS) and its ability to solve a problem in locating possible locations for a landfill site. Meanwhile, the third chapter will summarize the steps that have been followed in order to complete this project (methodology). There have four phases in project methodology; system planning, knowledge acquisition, prototype of findings and system implementation. Prototype of findings in chapter four discussing about the techniques that have been used to develop this system and finding the usability of this system besides performing analysis that related to the development of this system to produce a result. The last chapter consists of conclusion and recommendation regarding to this system.

# **TABLE OF CONTENT**

Declaration	ii
Dedication	iii
Acknowledgement	iv
Abstracts	vi
Contents	vii
List of Figures	ix

### CHATER ONE INTRODUCTION

1.0	*	Research Background	1
1.1	k. K	Problem Description	3
1.2	i a	Project Objective	5
1.3	-#. -#1	Project Scope	6
1.3.1	:	Project Study Area	6
1.3.2	:	List of Criteria	6
1.3.3	:	Project Input Data	8
1.3.4	:	Project GIS Spatial Operation	9
1.3.5	:	Application Software	10
1.4	:	Project Limitation	11

#### CHAPTER TWO LITERATURE REVIEW

2.0		Introduction	12
2.1	:	Definition of abbreviation	13
2.2	•	Spatial Decision Support System Overview	13
2.2.1	:	SDSS Evolution	14
2.2.2	:	SDSS Benefits	16
2.3	:	The Introduction of GIS	18
2.3.1	:	Definition of GIS	18
2.3.2	:	New and Old GIS	19
2.3.3	:	Why Need GIS	19
2.3.4	:	GIS Data	20
2.3.5	:	GIS and its used in waste management	21

#### CHAPTER THREE PROJECT METHODOLOGY

3.0	ž	System Planning	24
3.1	•	Knowledge Acquisition	33
3.2	¥	Prototype Design	36
3.3	<del>نه</del> ج	System Implementation	38