I. INTRODUCTION

1.1 Background

The Bandung Basin is surrounded by dormant volcanic mountains and the basement of this basin was considered as a paleo-lake site that created by paleo-volcanic activity. At present, the river of Citarum and its tributaries occupy all basin area. It covers an area around 2,670 km².

These days many of industrial activities are taking place in Bandung city, the capital of West Java Province and located inside the basin. These activities created the urbanization and have increased substantially the water demand at the present time and will increase even more in the near future. Nowadays, most factories are using groundwater resources to fulfill their daily needed water. In order to exploit the groundwater potential to its full extend, it is important to know how are the condition of the available groundwater and which quantities are involved.

Since 2005 Minerals and Coal Technology Research and Development Center (Puslitbang Tekmira) has A Remote Terminal Unit system for production and water level monitoring.

The device is only send the report when there is a request from mobile phone without information about regional ground water level condition. The Excellence of model emphasized to display some information of water level, groundwater production, royalty and graphical information about water level condition in Web GIS.

1.2 Definition of Problems

A groundwater monitoring system is the device in which automatically account of discharge or water volume as far leaking out from well or borehole. The system has a sensor and the data can be transmitted by GSM communication system. Using a mobile phone the data can be retrieved and will informed
groundwater condition in this area. In the current system, some problems will occur:

**First problem**

Recently there is a problem with data logger because of limitation of data storage capacity. This study aims to collect data from a device in which GSM system will transmit into server as temporal database of well groundwater production.

**Second problem**

When this research started there was already a monitoring groundwater production system which used GSM to GSM communication. This system cannot give historical data of wells so it is hard to analysis the groundwater condition. Based on that problem a new monitoring system has been developed based on network communication by using WebGIS and GSM communication.

System components for this study will be supported by some softwares that are readily available. They are Postgis and Postgress as spatial database management system, Cygwin for interfacing linux on top of windows, and SMS Gateway running under linux. For Information Publishing, the system uses Mapping Publish (pgAdmin III) and Web Publishing tools (Apache on MapGuide Open Source).

Figure 1.2 Frame work of system monitoring utilizing GSM Communication
1.3 **Objective**

The aim of this research is to design model groundwater production monitoring system. The system is built to answer the following question:

- How to do automation process of acquisition, storage, analysis and web based visualization of spatial data

1.4 **Output**

The output of this study is a web GIS model of groundwater monitoring system

1.5 **Outcome**

The model contains some current information about groundwater production in Bandung basin. The system also provides some spatial information such as well positions, amount of taxes/royalties from stakeholders who utilized groundwater and groundwater height contour