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SUMMARY

I. Title

“ A Study on the utilization status and sustainable use of a underground water (Focused on Yong-in city)”

II. Objectives and Importance

The amount of shortage of water supply is about 100 million tons on 2006 and it is expected that the amount of shortage will have been increasing up to 2.6 billion tons by 2020. Korea has used the lakes, rivers and ground water at 23% as the water sources. On the other hand, underground water charges only 3%. The amount of underground water sources for the lack of water in the future. It is necessary to study the status of the use, pollution and the control methods of water quality in order to provide the fundamental information for development of the underground water in the future. And a variety of developments of water treatment technics are required because of the development of appropriate treatment technics.

III. Research scope

We have studied about the status of the water supply and the water treatment plant facilities in Korea and Yong-in city and studied the stauts of the supply & demand of water and weakness regions according to analysis of the amount of developable water, the status of the development and use, the trend of the development and use and the status of the water use according to regions. And then, have studied the regions in Yong-in city where have possibility of the water pollution according to the status of the land-utility and analyzed the pollution due to golf links. We comprehended measurement items and the measurement points according to the management of water quality measurement net and the analysis of the state of materials of water quality measurement net in the whole country and Yong-in city.

IV. Results

A rainfall in Yong-in city is about 1303.1mm per year. It is more than average of whole country, however, the range of rainfall changing is 1758.8mm which is bigger than average of year. so, we can predict that development of underground water is more advantageous than surface water. Drinking water supply rate in Yong-in city is 88% similar with whole country(90.1%). but it is depend on a region. for example, Yang-ji, Beak-am, Nam-sa and Won-sam are the weakest points of drinking water supply. so, we can predict that those areas are region of developable.

The amount of developable rate in underground water was 33.4%(utilization/amount of developable). which is more than Seoul(51%) and Gyeonggi Province(48.7%) so, it has a bigger possibility of development. The total amount of underground water used was about 21 million ton per year and which are divided use of life(85%), agriculture(9%), industrial(2%) and others(4%). The transition of utilization was that the number of facilities has been increasing but amount of use was repeated with up and down. the amount of agriculture used was increased rapidly because Yong-in city has developed rapidly. In case of religion was that Nam-sa, Won-sam, Beak-am, Yang-ji which is low drinking water supply used more than other area relatively.

Polluter which can be pollutants of water quality was divided dry paddy·rice paddy·orchard, pasture, factory site, service station site, sporting facility site(golf links) by the status of the land-utility. and then these were studied. the result was that Nam-sa and Beak-am had the widest area induced pollution. In case of golf links which is caused NO₃-N and pesticide was occupied about 11% in whole country and then results of investigation in used status was that strong toxic matter wasn't detected but a lot of golf links used Fenitrothion contained drinking water quality standard, in result, it effected in underground water quality.

The water quality measurement net consisted of 4 measurement nets of the environmental office in the regions where have the possibility of the apprehended pollution, 4 measurement nets of the autonomy in common regions and 2 national underground water observation nets in 2004. result of water quality measurement was that the regions where have the possibility of the apprehended pollution was more polluter than common regions. The case of exceeding

standard was just one however this region was used as the drinking water sources. so, we need to manage strengtheningly. The value of Several NO₃-N, common bacterium almost reached standards. Although tiny amounts of As, TCE were detected, they always have the possibility of danger because they are so toxic.

VI. Application plan

We will provide these results with Yong-in city in order to be applied to in making decisions of policies as the basis materials and these results will be utilized as fundamental materials of the development of underground water and management. Furthermore these results will be used in the development of the optimal management system and the treatment technics and then, we will try that these results should be used as the references for the proposals of the efficient water treatment system according to types of underground water and water quality.

CONTENTS

Summary (Korean)	
Summary (English)	
Contents	
Chapter 1. Introduction	1
1.1 Requirement of research	2
Chapter 2. Status of Yongin City	4
2.1 General status	5
2.2 Nature status	6
Chapter 3. Research Performed	8
3.1 Objectives and Methods of Research	9
3.1.1 status of water resource	9
3.1.2 Polluter and pollutant status in ground water	10
Chapter 4. Research Results	12
4.1 Status of Water resource	13
4.1.1 Status of drinking water supply	13
4.1.2 Status of ground water utilization	16
4.2 Polluter and Pollutant status in ground water	24
4.2.1 Polluter of ground water quality	24
4.2.2 Polluter of ground water quality in Yongin city	27
4.2.3 Management system and status in net water quality measurement	31
4.2.4 Management of abandoned well	38
4.2.5 Water quality analysis in prospect region	53
4.3 Status of ground water management and regulation	58
4.3.1 Domestic status of management and regulation	58
4.3.2 Foreign status of management and regulation	59
4.4 Survey of ground water consumer's opinion	64

4.5 Methods of ground water treatment and development	74
4.5.1 Ground water recharge	74
4.5.2 Ground water dam	81
4.5.3 Water treatment systems for iron and manganese	83
4.5.4 Experiment for nitrate removal	104
Chapter 5. Achievements and Contribution	111
5.1 Expected effects	112
5.2 Further research and application plans	114
Chapter 6. Reference	115
6.1 Reference	116
Appendix	118

.....

SUMMARY 1

CONTENTS 1

1	.....	1
1.1	.....	2
2	.....	4
2.1	.....	5
2.2	.....	6
3	.....	8
3.1	.....	9
3.1.1	.....	9
3.1.2	.....	10
4	.....	12
4.1	.....	13
4.1.1	.....	13
4.1.2	.....	16
4.2	.....	24
4.2.1	.....	24
4.2.2	.....	27
4.2.3	.....	31
4.2.4	.....	38
4.2.5	.....	53
4.3	.....	58
4.3.1	.....	58
4.3.2	.....	59
4.4	.....	64

4.5	.....	74
4.5.1	.....	74
4.5.2	.....	81
4.5.3	.....	83
4.5.4	(.....)	104
5	.....	111
5.1	.....	112
5.2	.....	114
6	.....	115
6.1	.....	116
	.....	118