

Hydrological Investigation Ground Water Quality and its Aquifer Parameters

Dr. Arpan Deshmukh¹, Ravindra Pawar², Nikhil Ghule³, Vishal Chalak⁴, Pratik Tayde⁵

Project Guide, Department of Civil Engineering¹

Final Year Students, Department of Civil Engineering²⁻⁵

G H Raisoni College of Engineering and Management, Pune, India

Abstract: Water is the most critical component of life support system. India shares about 16% of the global population but it has only 4% of the water resources. The national water policy gives priority to drinking water followed by agriculture, industry and power. The single most important task before the country in the field of India's water resource management is to pay special attention to rainwater conservation, especially which falls on our vast rain-fed lands but most of which flows away from it. In Maharashtra every year due to uneven rain fall many of the region face drought problem. Paani foundation invested a year in research, understanding the problem and possible solutions. The Satyamev Jayate crew started a non-profit organization well known as Paani Foundation, which would spread knowledge of watershed management and groundwater replenishment. They learned about water conservation principles and watershed management structures like contour trenches, earthen dams, and soak pits, then went back to their villages and lead the work, which involved all the villagers pitching in volunteer (shramdaan) work. They executed their plans in the months before the monsoon, with their success measured after the rains. In this project the study on efforts taken by paani foundation due to scarcity of water by on site investigation.

Keywords: Key words groundwater quality; fluoride; health; groundwater management; Andhra Pradesh, India.

I. INTRODUCTION

Groundwater comprises 97 percent of the world's readily accessible freshwater and provides the rural, urban, industrial and irrigation water supply needs of 2 billion people around the world. As the more easily accessed surface water resources are already being used, pressure on groundwater is growing. In the last few decades, this pressure has been evident through rapidly increasing pumping of groundwater, accelerated by the availability of cheap drilling and pumping technologies and, in some countries, energy subsidies that distort decisions about exploiting groundwater. This accelerated growth in groundwater exploitation—unplanned, unmanaged, and largely invisible—has been dubbed by prominent hydro geologists—the silent revolution. It is a paradox that such a vast and highly valuable resource—which is likely to become even more important as climate change increasingly affects surface water sources—has been so neglected by governments and the development community at a time when interest and support for the water sector as a whole is at an all-time high.

II. LITERATURE REVIEW

The literature review analysis for the groundwater quality simulation using the capacity of the AI models over the past two decades and the countries who conducted research on this research domain. The literature review analysis for the groundwater quality simulation using the capacity of the AI models over the past two decades and the countries who conducted research on this research domain, Groundwater is one of the most important freshwater resources, especially in arid and semi-arid regions where the annual amounts of precipitation are small with frequent drought durations. Information on qualitative parameters of these valuable resources is very crucial as it might affect its applicability from agricultural, drinking, and industrial.

III. WORKING PRINCIPLE

Groundwater is recharged naturally by rain and snow melt and to a smaller extent by surface water (rivers and lakes). Recharge may be impeded somewhat by human activities including paving, development, or logging. These activities can result in loss of topsoil resulting in reduced water infiltration, enhanced surface runoff and reduction in recharge. Use of groundwaters, especially for irrigation, may also lower the water tables. Groundwater recharge is an important process for sustainable groundwater management, since the volume- rate abstracted from an aquifer in the long term should be less than or equal to the volume-rate that is recharged.

Recharge can help move excess salts that accumulate in the root zone to deeper soil layers, or into the groundwater system. Tree roots increase water saturation into groundwater reducing water runoff. Flooding temporarily increases river bed permeability by moving clay soils downstream, and this increases aquifer recharge.

3.1 COMPONENTS USED

Although this may seem surprising, water beneath the ground is commonplace. Usually groundwater travels slowly and silently beneath the surface, but in some locations it bubbles to the surface at springs. The products of erosion and deposition by groundwater were described in the Erosion and Deposition chapter.

Groundwater is the largest reservoir of liquid fresh water on Earth and is found in aquifers, porous rock and sediment with water in between. Water is attracted to the soil particles and capillary action, which describes how water moves through a porous media, moves water from wet soil to dry areas.

Aquifers are found at different depths. Some are just below the surface and some are found much deeper below the land surface. A region may have more than one aquifer beneath it and even most deserts are above aquifers. The source region for an aquifer beneath a desert is likely to be far from where the aquifer is located; for example, it may be in a mountain area.

The amount of water that is available to enter groundwater in a region is influenced by the local climate, the slope of the land, the type of rock found at the surface, the vegetation cover, land use in the area, and water retention, which is the amount of water that remains in the ground .



IV. RESULT AND DISCUSSION

The quality standards for drinking water have been specified by the World Health Organization (WHO) in 2004. The behavior of major ions (Ca, Mg, Na, K, HCO₃, SO₄, Cl) and important physico-chemical parameters such as pH, electrical conductivity (EC), total dissolved solids (TDS), and total hardness (TH) and the suitability of groundwater in the study area are discussed below.

V. CONCLUSION

As demand for water increases, water managers and planners need to look widely for ways to improve water management and augment water supplies. The Committee on Ground Water Recharge concludes that artificial recharge

can be one option in an integrated strategy to optimize total water resource management, and it believes that with pretreatment, soil-aquifer treatment, and post treatment as appropriate for the source and site, impaired-quality water can be used as a source for artificial recharge of ground water aquifers.

At Paani Foundation, we believe in the transformative power of collective action. We are convinced that only a broad-based people's movement that brings the village community together, can face this crisis. Our mission is to create a drought-free and prosperous Maharashtra, by fostering social unity and providing scale to proven solutions and technologies

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