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Drought Resilient Water Supply for Livelihood: Establishment of Groundwater Treatment Plant at Construction Sites in Taichung City

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Abstract : The year 2021 marked a historic drought in Taiwan, posing unprecedented challenges due to record-low rainfall and inadequate reservoir storage. The central region experienced water scarcity, leading to the implementation of "Groundwater Utilization at Construction Sites" for drought-resilient livelihood water supply. This study focuses on the establishment process of temporary groundwater treatment plants at construction sites in Taichung City, serving as a reference for future emergency response and the utilization of construction site groundwater. To identify suitable sites for groundwater reuse projects, site selection operations were carried out based on relevant water quality regulations and assessment principles. Subsequently, the planning and design of temporary water treatment plants were conducted, considering the water quality, quantity, and on-site conditions of groundwater wells associated with construction projects. The study consolidates the major water treatment facilities at each site and addresses encountered challenges during the establishment process. Practical insights gained from operating temporary groundwater treatment plants are presented, including improvements related to stable water quality, water quantity, equipment operation, and hydraulic control. In light of possible future droughts, this study provides an outlook and recommendations to expedite and improve the setup of groundwater treatment plants at construction sites. This includes considering on-site water abstraction, treatment, and distribution conditions. The study's results aim to offer practical guidelines for effectively establishing and managing such treatment plants, while offering experiences and recommendations for other regions facing similar emergencies, water shortages, and drought situations. These endeavors contribute to ensuring sustainable water supply for drought-resilient livelihoods and maintaining societal stability.

Keywords : drought resilience, groundwater treatment, construction site, water supply
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