ABSTRACT

This project focus on the sustainable urban water supply system aims to meet the water demands of a growing population while minimizing environmental impact and ensuring long-term resource availability.The design integrates efficient water sourcing which consists of surface water,ground water,desalination and rainwater harvesting processes.Water treatment which consists of energy- efficient treatment method,natural treatment method and on -site treatment and recycling.Water conservations which consists of public education,water pricing,incentives and regulations.Water distribution which consists of leakage detection and prevention,pressure management and zoning and decentralized systems and water management reuse, focusing on minimizing energy consumption, reducing water losses, protecting natural ecosystems and nutrition recovery. Key components include smart water management technologies such as Internet of Things(IoT),automated controls and data analysis and artificial intelligence and rainwater harvesting, groundwater recharge, and wastewater recycling. Sustainability is achieved by incorporating renewable energy sources are producing the use of renewable energy and energy-efficient pumping systems, promoting water conservation, and for community engagement considered for public participation and legislation. Financial and institional sustainability are consisting of sustainable financing models and institutional capacity.The system also adapts to climate change, ensuring resilience against droughts, floods, and other environmental challenges.The storm

water management is a critical components of sustainable water systems which included green infrastructure,retention ponds,wetlands and combined sewer overflow reduction.Water security and risk management which consists of redundancy and backup systems,emergency preparedness plans and risk management.Cross -sector collaboration which may get included such as integrated wate and energy planning,agricultural collaboration and urban planning integration.An lifecycle thinking of the water system construction to decommissioning are comes under the material sustainability,energyuse across the lifecycle and end of life planning.Biodiversity and ecosystem protection are may get included by the riparian buffer zones,habitat creation and river restoration.