



PAAVAI ENGINEERING COLLEGE

(Autonomous Institution)

(Approved by AICTE and Affiliated to Anna University)

(Accredited by National Board of Accreditation, New Delhi & NAAC (UGC) with 'A' Grade)

Paavai Nagar, NH - 7, PACHAL, NAMAKKAL - 637 018. Tamil Nadu

☎ 04286-243038, 58,88 & 98 Fax: 04286-243068 Email: pecprincipal@paavai.edu.in website: http://pec.paavai.edu.in

7.1.4 Water conservation facilities available in the Institution:

1. Rainwater Harvesting

Paavai Engineering College, located in Pachal, Namakkal, is situated in a rural area where groundwater levels are relatively low, making water conservation a critical concern. To address this challenge, the college has implemented a rainwater harvesting system, specifically the Mega Rainwater Harvester. This system plays a vital role in capturing and storing rainwater for future use, reducing the strain on groundwater resources. The Mega Rainwater Harvester covers an area of 270 feet by 180 feet, with a depth of 18 feet, giving it a total storage capacity of approximately 874,800 cubic feet. This capacity allows it to store around 2 crore liters of water, which can be used for a variety of purposes, including irrigation for thousands of acres of nearby cultivable land. The design of the harvester includes a 5-foot layer of ordinary soil, followed by 13 feet of soft rock, which provides an ideal structure for storing rainwater. The implementation of this system has a far-reaching impact on the surrounding environment. By replenishing groundwater levels within a 400-acre radius, it significantly contributes to water sustainability in the region, ensuring a reliable water supply for the local community. Beyond its practical benefits, the rainwater harvesting system also enhances the aesthetic appeal of the campus. This serene environment offers students a peaceful space to relax and unwind, promoting overall well-being and mental relaxation, which further enriches the campus experience. The lake has become an ideal location for students to spend their leisure time, contributing to their emotional and mental health.

Paavai Engineering College's Mega Rainwater Harvester serves as both a functional and environmental asset, enhancing water sustainability in the region while creating a serene, picturesque environment for students to enjoy.



‘AMIRTHAVARSHINI’ a Mega Rain water Harvester



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‘AMIRTHAVARSHINI’ a Mega Rain water Harvester

Benefits of ‘AMIRTHAVARSHINI’

1. AMIRTHAVARSHINI can be an excellent back-up source of water for the college.
2. It reduces demand on ground water.
3. Rainwater harvesting systems are energy efficient and environmentally friendly in nature.
4. Low maintenance cost and requirements.
5. It reduces the soil erosion and runoff.
6. Rainwater is free from various chemicals found in ground water.
7. It is suitable for irrigation and watering gardens.

Composite Fish Culture:

The Composite Fish Culture System was developed by the Indian Council of Agricultural Research in the 1970s, the composite fish culture system involves the cultivation of multiple fish species together in a single fish pond. This method maximizes the efficient use of resources and promotes ecological balance within the aquatic environment. It is a method in which five or six different types of fish species are grown together in a single fish pond. Paavai Engineering College has integrated composite fish culture into its rainwater harvesting system. By doing so, they aim to maintain soil and water fertility while also utilizing the harvested rainwater effectively. The composite fish culture system typically involves the cultivation of five or six different types of fish species. At Paavai Engineering College, both local and imported fish species are available, allowing for a diverse aquatic ecosystem within the fish ponds. Water is precious and it is one of the elements, which is very



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essential for living. All organisms require water for their life and living. Now, due to climatic change the ecosystem has become imbalanced. So there is a scare of water all around the earth.

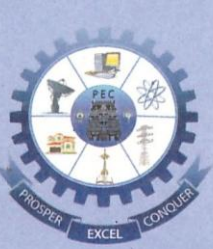
The water based resources in the future depends on the sustainability of the current and future water resource allocation. As water becomes more scarce the importance of storing becomes significant. The balance between using water based on necessity of human and environment becomes an important thing. Therefore it is the responsibility for all individuals, organizations and institutions to conserve, maintain water for their use. So, Paavai Engineering College has cater the needs of society by having the Rain water harvester which benefits the rural areas. So save water and save your life.

2. Bore well /Open well recharge

At Paavai Engineering College, groundwater is a crucial source of water for both domestic and agricultural use. The campus has approximately five bore wells, each with a 6-inch diameter and depths ranging from 600 to 750 feet, tapping into underground aquifers to supply water. In addition to the bore wells, the campus also features three open wells, with depths between 50 and 60 feet, further contributing to the groundwater supply. Water from both bore wells and open wells is used across the campus for various purposes, including domestic needs such as drinking, sanitation, and other day-to-day requirements. The groundwater is also employed for agricultural activities, including the irrigation of nearby fields. Each well has its own dedicated water supply system that ensures efficient distribution of water to different areas of the campus and its surroundings.

To promote sustainable water management, the campus has been designed with roads featuring adequate camber, which helps facilitate the drainage of rainwater during the rainy season. This rainwater runoff is not wasted; instead, it is channelled into wells to recharge the groundwater levels, ensuring that the aquifers remain replenished. Additionally, the campus collects rainwater from the terraces of the building blocks and channels it into the wells, further aiding in groundwater recharge.

The campus also prioritizes the proper functioning of its water supply infrastructure. Pumps, motors, and water supply systems are regularly monitored and maintained to ensure smooth operation and prevent potential issues that could disrupt the water supply. This proactive approach ensures that both the domestic and agricultural water needs of the college are met efficiently.



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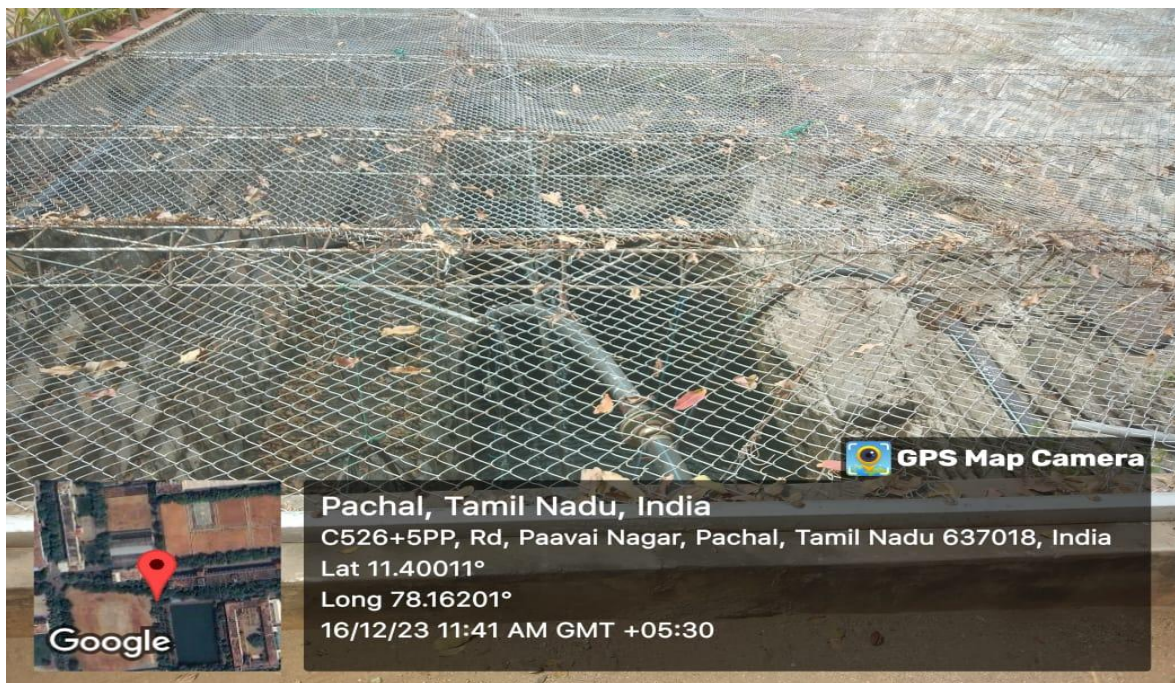
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Open well 1



Open well 2



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Open well 3

3. Construction of Tanks and Bunds:

Paavai Engineering College has implemented a comprehensive water storage and management system across its campus, ensuring efficient use of water resources and promoting sustainability. The campus features a network of storage tanks, which includes 14 overhead tanks with capacities ranging from 5,000 to 6,000 liters each, and 2 large underground tanks with capacities of 20,000 liters each. These tanks are primarily supplied with groundwater from the bore wells, open wells, and other water bodies on the campus. The water storage system is carefully organized to meet different needs across the campus. A dedicated tank system is responsible for storing drinking water, ensuring that clean and safe water is always accessible to the campus community. Additionally, there is another tank system specifically designated for storing bore water, which is typically used for non-potable purposes, such as irrigation of the campus grounds or other industrial applications. The maintenance department plays a key role in ensuring the quality of stored water. They are responsible for regularly cleaning the tanks, following government guidelines to prevent contamination and ensure the water remains safe for use.

In addition to the water storage infrastructure, Paavai Engineering College has constructed bunds throughout the campus. Bunds are embankments or barriers that are designed to retain water and prevent soil erosion, particularly in lightly sloping areas. These bunds serve several purposes, including retaining rainwater, controlling erosion, and regulating water flow across the campus landscape. They help maintain the structural integrity of the campus environment and prevent damage to infrastructure.



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To ensure their continued effectiveness, bunds are regularly inspected and maintained. These periodic assessments help identify potential issues such as leaks or erosion and ensure that the bunds are functioning properly to protect the campus from water-related damage.



Water Tank 1



Water Tank 2



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Water Tank 3

4. Waste Water Recycling

Paavai Engineering College has implemented an effective Waste Water Treatment (WWT) plant located at the back of the men's hostel. This plant is designed to treat up to 4,50,000 liters of wastewater per day, playing a vital role in managing the campus's water resources and supporting sustainability. The wastewater undergoes a series of treatment processes, which likely include physical, chemical, and biological methods, to remove contaminants and impurities, making it safe for reuse. Once treated, the water is used for several non-potable purposes across the campus. The primary application is for gardening, where the treated water is used to irrigate the college grounds, ensuring that the landscaping is well-maintained while reducing the demand for freshwater. Moreover, the treated water is also supplied for irrigation on agricultural lands in the neighbouring areas, promoting efficient water use and supporting local farming practices. By processing wastewater before reuse, the Waste Water Treatment plant significantly reduces the environmental impact of wastewater discharge. Instead of being released untreated, which could harm local water bodies, the wastewater is purified and utilized for beneficial purposes. This also helps in conserving freshwater resources, as treated wastewater is now available for non-potable uses, reducing the need for additional freshwater withdrawals.

The Waste Water Treatment plant at Paavai Engineering College exemplifies the college's proactive approach to environmental stewardship, showcasing their commitment to sustainable resource management and water conservation. This initiative not only benefits the campus but also positively impacts the local agricultural community by ensuring the efficient and responsible use of water.



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Waste water recycling plant

The following are the components of Waste Water Recycling plant:

1. Bar screen chamber
2. Grit chamber
3. Collection tank
4. Aeration tank
5. Treated sewage collection tank
6. Roots blowers & Diffusers
7. Raw sewage transfer pump
8. Bio-mass recirculation pump.
9. Sludge drying pump
10. Pressure sand filter & Activated Carbon Filter
11. Filter feed pump

Bar Screen chamber => It is used for the Removal of floating materials. The size of the Screen Chamber is length = 2m, width = 1m and Depth = 1.5m.

Grit Chamber => It is used for the removal of Grid particles or Inorganic particles such as Sand Gravel, Slit and glass materials .The size of Grid Chamber is 2.0m length, 2.0m width, 2.0m depth.

Equalization tank => It is used for Neutralizing the characteristics of waste water. The size of Equalization tank is 15m length, 3.5m width, 3m liquid depth.

Activate Sludge Process => It can be used for the Removal of BOD from waste water. Hydraulic detention time is 20 hrs. Size of the tank is 15m length, 15m width and 3m liquid depth.



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Sludge drying beds is used for dewatering of sludge with the help of sunlight. Size of the sludge drying beds is 3m x 2m x1.5m.

Benefits of Water Recycling:

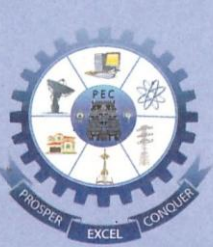
1. It mainly helps in reducing water scarcity around the campus.
2. It can be used for creating or enhancing wetlands.
3. During this process, electricity and soil amendments are generated.
4. The recycled water can be mainly applied to agricultural and domestic purposes etc.
5. It reduces waste water discharges by reducing and preventing pollution of water.

6. Maintenance of Water bodies and Distribution system in the campus:

Paavai Engineering College adopts a comprehensive approach to water management, ensuring a sustainable, consistent, and safe water supply for its campus. Regular maintenance of water bodies is essential in maintaining the quality of the water, making it free from harmful bacteria, viruses, and other microbes. One of the key methods used for disinfection is chlorination, which effectively eliminates harmful microorganisms, thereby preventing waterborne diseases such as cholera, dysentery, and typhoid. The campus is equipped with an efficient water distribution system, utilizing a network of well-maintained pipes. For drinking water, the college employs advanced treatment processes like ozonization and reverse osmosis to ensure water is purified and safe for consumption. Separate distribution systems are in place to distinguish drinking water from water used for other purposes, ensuring the highest water quality standards for consumption. Additionally, low-flow plumbing fixtures have been installed throughout the campus to minimize water wastage without compromising performance. Education and awareness regarding water conservation play a crucial role on campus. Collaborators, including students and staff, are regularly educated and motivated about the importance of efficient water usage and conservation practices.

The Maintenance Department plays a critical role in ensuring the proper functioning of the water supply system. Scheduled inspections are carried out on a daily, weekly, monthly, and annual basis to detect any potential issues, such as leaks, and to ensure that all machinery is working efficiently. This proactive approach to maintenance helps prevent water wastage and ensures a reliable supply of water for all campus activities.

Paavai Engineering College's water management practices are centered around safety, sustainability, and efficiency. Through regular maintenance, advanced water treatment processes, and active conservation measures, the college ensures a safe, reliable water supply while minimizing its environmental impact and promoting responsible water use across the campus.



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Distribution system



Distribution system