

**Parvatibai Chowgule College of Arts and Science**  
**Autonomous**

*7.1.4 Water conservation facilities available in the Institution*

*Additional information*

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## **1. Water management on campus**

The following measures are taken for the management of water:

### **1. RAIN WATER HARVESTING**

The rain water coming from roof tops and that flowing within the campus are collected in percolation pits, constructed at all feasible points in the campus recharge ground water. Ground water retention is enhanced by covering open spaces by pavers and lawn.

### **2. CONSTRUCTION OF CONTOUR TRENCH**

A contour bund of size 240 m x 1m x 1m is created along one boundary of the college for the percolation of rain water.

### **3. RE-USAGE OF WASTE WATER**

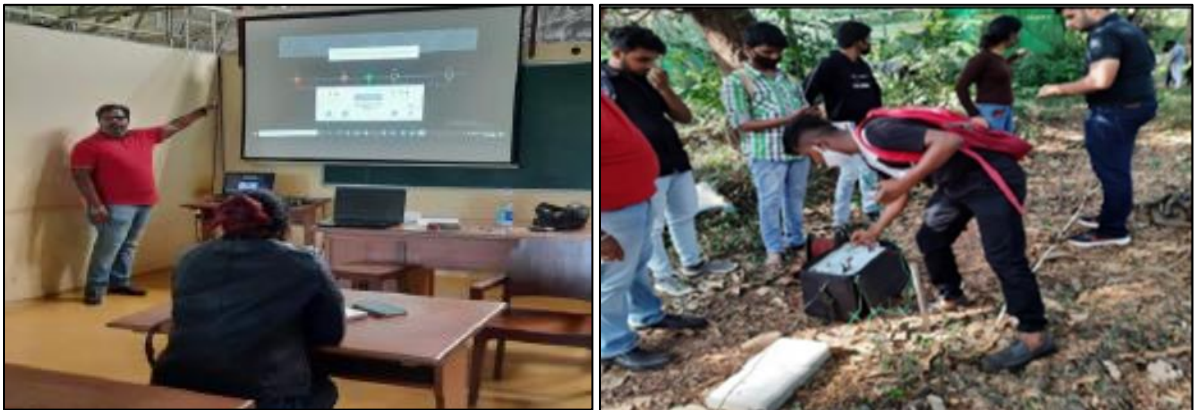
Wastewater discharged as effluent from septic tank and canteen wastewater are used for gardening, watering of trees etc.

### **4. MAINTENANCE OF WATER DISTRIBUTION SYSTEMS IN THE CAMPUS**

The ground water is pumped into storage tanks located at different places in the campus. There are overhead storage tanks in the campus. The water is distributed through well laid pipe network. Entire distribution system is well supervised by management committee to ensure that there are no leakages and wastages of precious water through joints, valves etc. Waste usage of water is reduced using low pressure flushes. All the stakeholders of the college are well educated to use water economically and efficiently.

## 2. Activities conducted

- The Department of Geology organized a one day workshop on ‘Geophysical Methods for Groundwater Exploration Using Resistivity Method’ for the students of S.Y.B.Sc, Groundwater and Hydrogeology course under DBT star scheme. The objective of the workshop was to cover the theory and practical aspects of geophysical exploration using resistivity meter & to give them an experience of field data collection & interpretation. The resource person for the workshop was Mr. Smitesh Talawadekar, Proprietor and Managing Director of Terra Hydrotech Solutions. The workshop was held on 21st December, 2020. 15 students attended the session and Mr. Malcolm Afonso was the coordinator, faculty, from the Department of Geology.



- Mr. Ashish Ashwini, Assistant Professor, Department of Geography, participated in a one-day National Seminar on “Water Resource Management Using Geospatial Technology (WRMGT-2021), organized by Department of Geography, Rajarshi Shahu Mahavidhyalaya (Autonomous), Latur (MS) on 18th February, 2021.
- Dr. Anil Yedage, Assistant Professor, Department of Geography, was invited as Resource Person for a National seminar on Water Resources Management Using Geospatial Technology conducted by Rajarshi Shahu Mahavidhyalaya (Autonomous), Latur, Maharashtra on 18th February, 2021.

### **3. Student's project related to water conservation**

GEOPHYSICAL SURVEY USING VERY LOW FREQUENCY ELECTROMAGNETIC METHOD TO DELINEATE BORE-WELL POINTS FOR RECHARGE AS WELL AS FOR PRODUCTION PURPOSE AND PREPARING A DECENTRALIZED WATER MASTER PLAN BYSETTING UP A RAINWATER HARVESTING SYSTEM FOR PARVATIBAI CHOWGULE COLLEGE OF ARTS AND SCIENCE AUTONOMOUS, GOGOL, MARGAO-GOA

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Under the supervision of SHRI H.S.S NADKARNI

#### **Abstract**

The primary aim of the study is to delineate suitable bore-well points for recharge as well as for productivity purpose in Parvatibai Chowgule College of Arts and Science Autonomous, Gogol, Margao-Goa using the Very Low Frequency – Electromagnetic (VLF EM) geophysical method and setting up a Rainwater Harvesting System for the college. In order to achieve the aim, the following objectives have been set:

- 1) Carry out VLF EM survey in the area under investigation on a grid pattern.
- 2) To identify suitable bore-well points for drilling.
- 3) GPS marking of the anomalous points in the field.
- 4) To prepare contour maps to understand the groundwater occurrence in the subsurface.
- 5) To prepare and suggest a decentralized water master plan by setting up a rainwater harvesting system.

The premise of the college has been located on the downslope of a small mound. The North Western and South Eastern boundaries of the campus are bounded by two gullies. During every rainfall a huge amount of rainfall is found down to gush down these gullies into drains.

A need is thus felt to augment the supply of water requirements of the college by tapping such water and prepare a plan showing recharge point.



*Google Earth image of delineated bore well points of the profile*

Based on the analysis of hydrogeological and geophysical data the following conclusions are derived;

1. Few major fractures and many minor fractures are detected in the area. Therefore, the area has good prospects for groundwater.
2. The recommended depth of drilling for recharge is around 30 to 40 meters.
3. The recommended depth of drilling for production is around 60 to 70 meters.
4. The recommended diameter of recharge well is 8 inches. If enough space for setting up drilling rig is not available then 5” inches diameter well is recommended.
5. To sustain the groundwater sources for a long time, it is necessary to implement rainwater harvesting system to artificially recharge the aquifers.

## **RECOMMENDATION**

The study area has sufficient groundwater reserve. Groundwater can be utilized as the primary source of water. This groundwater can be utilized to fulfil all the secondary needs of human settlement and for commercial use. To make the groundwater source sustainable it is recommended to compulsorily recharge the groundwater sources.

Rainwater should be collected, channelized, filtered, recharged, pumped and distributed to utilize it for fulfilling secondary water needs and surplus can be recharged to make groundwater resources sustainable. The filtration techniques used can be pebbles sand filter beds along with a bed of activated charcoal or stainless-steel screen filtration techniques can be used.

## Terra Hydrotech Solutions

Address: 145/H, ~~Lata Kuni~~, Fatima Colony, Alto Dabolim, Goa - 403 801  
 Website: [www.terrahidrotech.com](http://www.terrahidrotech.com) Contact No: +91 99676 50937 / 9822985767

To, Chowgule College  
Gogol, Margao- Goa

Date: 11-03-2019

**Quotation**

Sr. no.	Item	Unit	Qty.	Rate	Amount
1	Production Bore well	1	1	1,30,000	1,30,000
2	Recharge bore well	1	2	85,000	1,70,000
3	Pumping system	1	1	50,000	50,000
4	Surface filtration	1	1	65,000	65,000
5	Rooftop filtration	1	1	65,000	65,000
	<b>*EXCLUDING PLUMBING CHARGES*</b>				
			<b>Grand Total</b>		<b>4,80,000</b>


Extra 18% GST will be applicable if payment is made by cheque and if bill is required.

**Payment Terms**

- 1) 50 % Advance to be paid before commencing the work.
- 2) Balance 25% payment to be done after completion of drilling work.
- 3) Balance 25% payment to be done after completion of installation of pumping system.

**Note**

- 1) Minimum 35m charge is applicable.
- 2) Selection of pumping system will merely depend on the total head required and final depth of drilling.
- 3) Pump installation cost is inclusive.
- 4) We are not responsible for dry and dirty / saline water and collapse.
- 5) One tanker water will be needed during each borewell drilling.
- 6) The quotation is valid for 30 days.



For Terra Hydrotech Solutions



*Quotation for Cost of Installing Project*



*Data collection in the field (recharge points)*



*Data collection in the field (recharge points)*