




# AMITY UNIVERSITY


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### 7.1.4. Water conservation facilities and Watershed management available at Amity University Rajasthan


**Mapping of Water Conservation Practices in Amity University Rajasthan**



**Lake**




**Sprinkler for Irrigation**




**Cooling Ducts**


AUR campus has an in house sewage treatment plant. (STP). Water treated in the STP is used for cooling ducts, irrigating the campus greens and collection in the lake.




**Surface Drain Pipe (Top View)  
Roof Top Drain Pipe (inset)**



**Water Collection Pit**

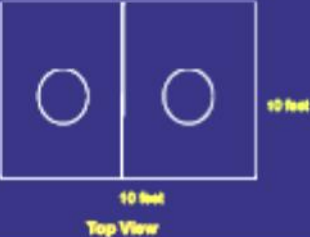


**Surface Drain Pipe (Side View)**



**Borewell**

On the rooftop of every building there are roof drains for removing water from roof surface (inset). The water from these roof drains and from surface drain pipes all across the campus is taken to rainwater collection pit and from there it gets transferred to water harvesting pit. Approximately 22 lac litres of water has been collected in the last one year of rainfall and recharged into the groundwater.

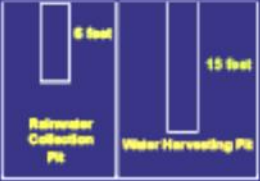


**Water Collection Pit**

10 feet

10 feet

Top View



6 feet

15 feet

Rainwater Collection Pit

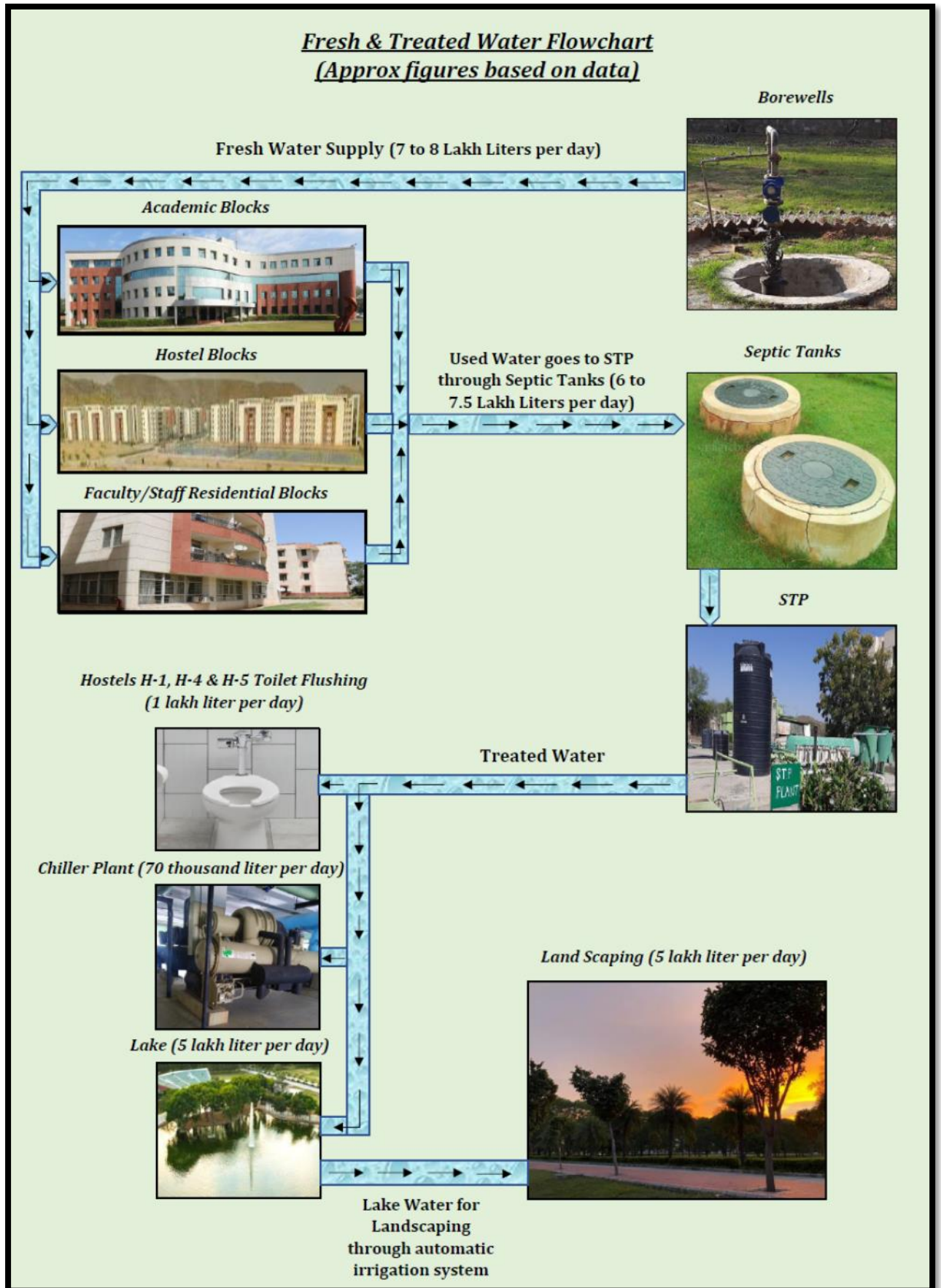
Water Harvesting Pit

Side View



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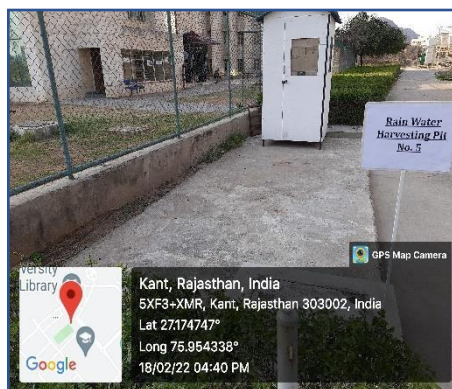
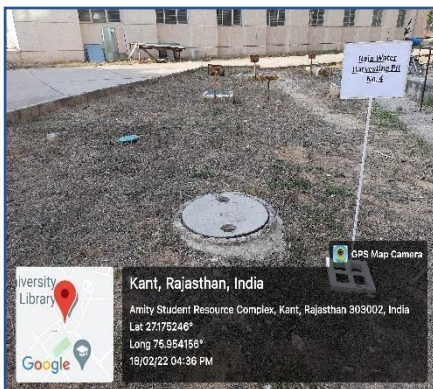


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### Rainwater harvesting

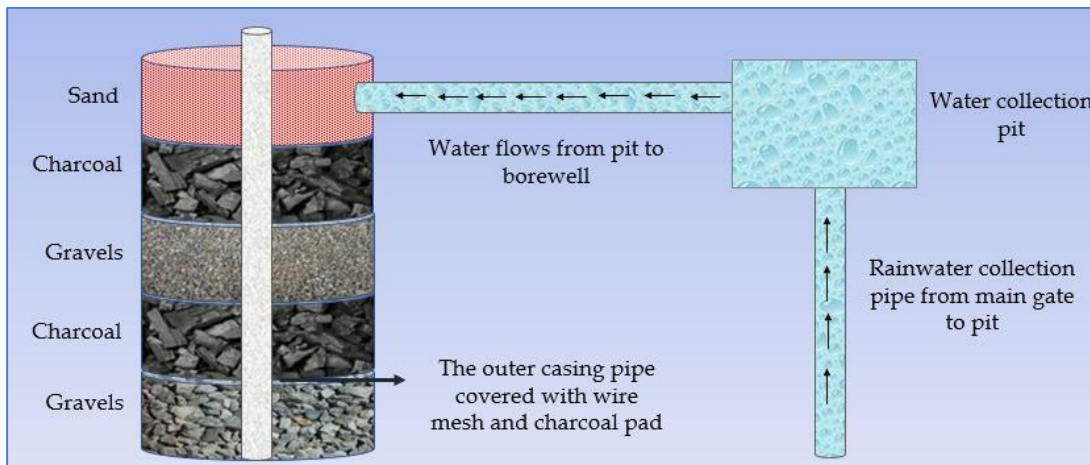
- Rainwater harvesting is through lake and through 8 different recharge pits created indifferent areas of the campus to recharge groundwater.
- The rainwater collected in these pits from the roofs of the buildings and is used for horticulture.
- One bore well recharge pit has been created near the main gate to harvest rainwater.



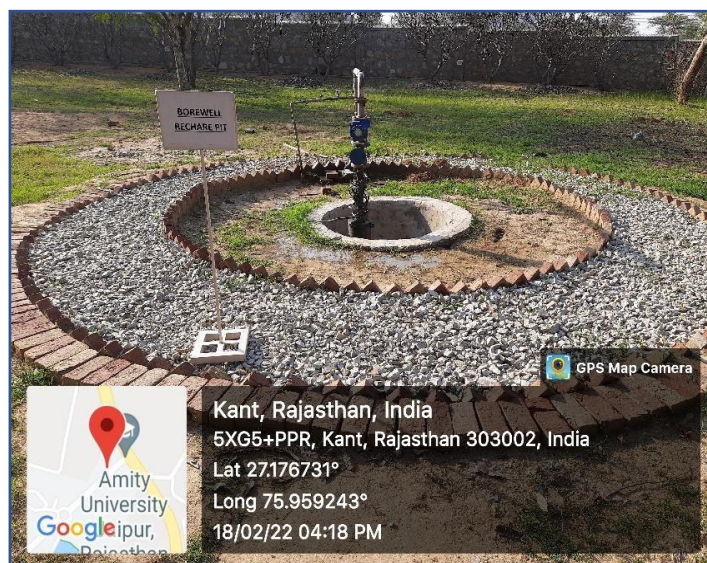
**Rain Water Harvesting Through Recharge Pits at Amity University Rajasthan**



1. **Borewell Recharge:** The purpose of the borewell recharge pit is to
  - a. Divert rainwater from low-lying areas to prevent flooding
  - b. Provide a passage for rainwater from terraces of buildings and other structures
  - c. Channelize the water to a borewell through proper filtering, thus harvesting for future use
  - d. Recharge dry borewells to prevent the digging of new ones
  - e. Conservation of water through eco-friendly means
  - f. Ensures proper utilization of rainwater which otherwise could stagnate and fester mosquitoes / harmful bacteria



**Material & Diagram of Collecting and Recharge pits**



**Rainwater flows into the recharge pit**



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### 2. Construction of tanks and bunds

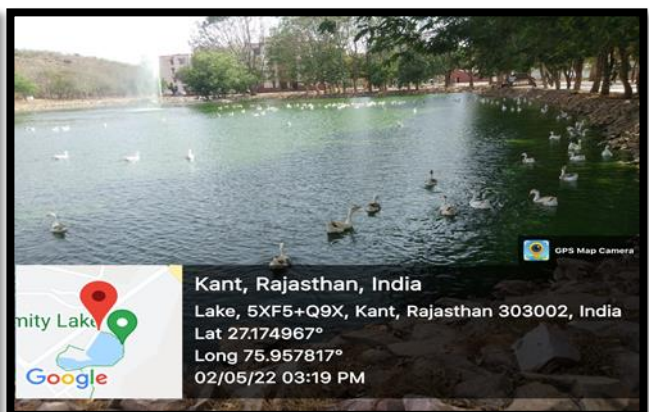
Source of fresh water is through Borewells. Water is stored in underground and overhead. The University has five Academic Blocks, one Student Resource Centre, five Hostel blocks, Six faculty blocks and one Staff quarter block with more than 3500 residents.

- Water is supplied to various buildings through a network of underground sumps and overhead tanks. Water from the borewell is pumped to the underground tanks, from the underground tanks it is pumped to the overhead tanks. There are a total of 34 overhead tanks (both RCC and Sintex) and 08 underground tanks. Plumbers work in shifts to ensure adequate supply to each building.
- Aquaguard are installed in water dispensers. Wastewater is channelled to STP plant and after treatment is utilized for flushing, horticulture and in chiller plants.
- One bore well recharge Tank has been created and other near the rear gate. This will help in collection and harvesting of rain water.

#### ➤ **Water Harvesting Lake:**

A manmade water-harvesting lake contributing towards conservation of natural resources is located in the heart of Amity University Rajasthan. The artificial lake gets treated water from the Sewage Treatment Plant. Rainwater from terraces of buildings, and other low lying areas also flows to this lake. This water is used for horticulture, thus ensuring literally zero wastage of water. The artificial water harvesting lake created stores treated water for horticulture purposes. The lake water for horticulture is pumped from the lake for auto Irrigation system. It attracts beautiful migratory birds thus enhancing the biodiversity and overall ecosystem of the University campus.

### Water Harvesting Lake at Amity University Rajasthan



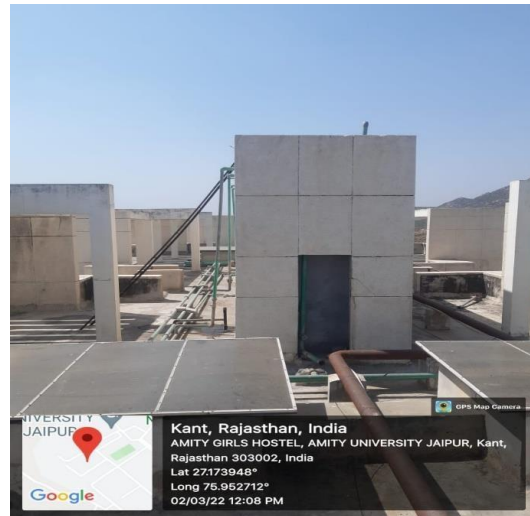


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*Underground Tank*



*Overhead Tank*

### **Wastewater Recycling**

- The liquid waste generated in the campus is from sewage of labs, residential and canteen facilities, hostels and laundry. The above waste is treated through a Sewage Treatment Plant (STP) and Effluent Treatment Plant (ETP) of 7.5 lakh LPD available in the campus.
- Water after treatment, is sent to a treated water lake, from where it is used for horticulture through an auto irrigation system. Fountains in the lake ensure proper aeration and as the process of use is dynamic, stagnation does not occur negating bad odor.
- Carp fish are there in the lake which prevents any algae growth by consuming the same, thus keeping the lake clean.
- Treated water is also used for the cooling tower of chiller plants and for the flush system of four hostels (Hostel-1, 2, 4 & 5).
- The sludge settled in STP is removed and is dried on drying beds and used as manure for the gardens. Therefore, the entire wastewater generated in the campus is treated and reused.



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**Certificate of Analysis**

| Quality Standard   |   | Parameters as desired                                     |  |
|--------------------|---|---|--|
| Issued to          | - | Green Wastetech, Sushant Lck-1, Gurgaon                   |  |
| Kind atn.          | - | Mr.   |  |
| Analysis no.       | - | 21122701  |  |
| Nature of Sample   | - | Waste Water Sample marked Amity Jaipur, STP Outlet        |  |
| Sample received on | - | 27 <sup>th</sup> December 2021                            |  |
| Report Date        | - | 14 <sup>th</sup> January 2022                             |  |
| Analysis Dates     | - | 27 <sup>th</sup> December to 1 <sup>st</sup> January 2022 |  |
| Sample Receipt     | - | By Client   |  |
| Sample Packing     | - | Pet Bottle  |  |
| Sampling Method    | - | Grab Sampling   |  |

|          | PARAMETER               | UNITS     | RESULTS | TEST METHOD     | LIMIT   | LAND FOR PROTECTION |
|----------|-------------------------|-----------|---------|-----------------|---------|---------------------|
| Organics | Chemical Oxygen Demand  | mg/l      | 16      | IS 3025 PART 39 | 250     | INLAND SURFACE      |
|          | BOD for 03 days at 27°C | mg/l      | 5.2     | IS 3025 PART 44 | 30      | PUBLIC SEWER        |
| Physical | pH                      | Unit Less | 7.43    | IS 3025 PART 11 | 5.5-9.0 | 5.5-9.0             |
|          | Total Suspended Solids  | mg/l      | 4.4     | IS 3025 PART 17 | 100     | 600                 |
|          | Total Dissolved Solids  | mg/l      | 523     | IS 3025 PART 16 | 2100    | 2100                |
| Chemical | Oil & Grease            | mg/l      | 0.20    | IS 3025 PART 39 | 10      | 20                  |

Remarks: The no. of parameters tested is 06 only. The report is issued subject to the terms & conditions as mentioned over leaf.

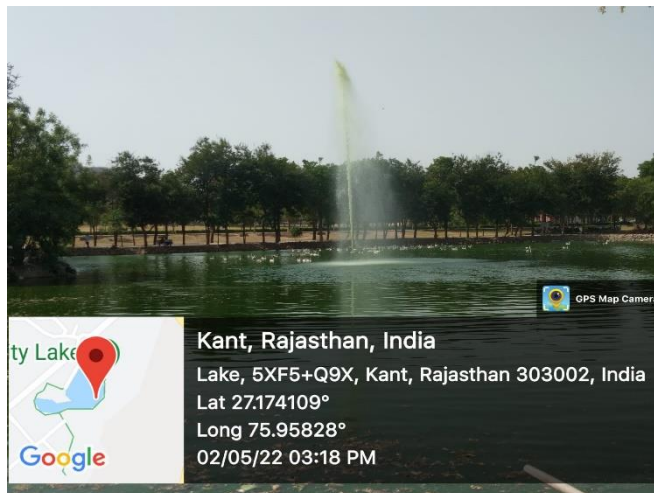
Chemist
Authorized Signatory

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 Exclusive representatives in India for Sens Aqua, Naeringslagen No. 7340, OPPDAL, Norway  
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**Sewage Treatment Plant (STP) at Amity University Rajasthan**

### Water Testing Report



*Fountain in the lake for manual aeration.*

- An average data of treated water through STP and ETP from 2019 to 2021 is mentioned (Table-04).

### Efficient utilization of treated STP year wise



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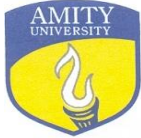
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### Amity University STP & ETP 2019 to 2021

| Treated Water Lake (Ltr.) Per Day<br>Treated Water Chiller (Ltr.) Per Day<br>Treated Water Flushing for Hostel (Ltr.) Per Day<br>ETP Water for Lake (Ltr.) Per Day |         |          |             |        |         |          |             |        |         |          |             |
|--|---------|----------|-------------|--------|---------|----------|-------------|--------|---------|----------|-------------|
| 2019   |         |          |             | 2020   |         |          |             | 2021   |         |          |             |
| Lake   | Chiller | Flushing | ETP to Lake | Lake   | Chiller | Flushing | ETP to Lake | Lake   | Chiller | Flushing | ETP to Lake |
| 572354   | 0       | 0        | 17064       | 395806 | 0       | 65225    | 10935       | 134193 | 0       | 14709    | 741         |
| 587964   | 0       | 0        | 18428       | 374775 | 0       | 70285    | 11821       | 171071 | 0       | 12857    | 3750        |
| 488967   | 0       |          | 17032       | 938580 | 0       | 33354    | 5032        | 295806 | 8612    | 29032    | 8709        |
| 436200   | 39935   |          | 17066       | 620066 |         | 14833    | 933         | 22366  | 10133   | 45966    | 4700        |
| 439129   | 54433   | 24033    | 13548       | 57612  | 0       | 12741    | 0           | 140645 | 0       | 18838    | 0           |
| 240533   | 48935   | 50064    | 10400       | 121400 | 11400   | 14133    | 0           | 44333  | 0       | 18033    | 0           |
| 299935   | 37900   | 39200    | 8967        | 63774  | 0       | 12516    | 0           | 128612 | 0       | 14419    | 0           |
| 237033   | 33161   | 200129   | 10700       | 103322 | 3290    | 10838    | 1290        | 29354  | 0       | 14354    | 0           |
| 339258   | 38433   | 154266   | 10193       | 37933  | 0       | 22900    | 1300        | 101000 | 0       | 2110     | 0           |
| 194709   | 20129   | 119516   | 8870        | 140032 | 0       | 37580    | 1548        | 99258  | 8774    | 15290    | 8548        |
| 106233   | 1700    | 134833   | 5161        | 139333 | 0       | 16233    | 3433        | 78333  | 0       | 22800    | 5733        |
| 419677   | 0       | 80064    | 5548        | 135741 | 0       | 14709    | 1161        |        |         |          |             |
| <b>Average</b>   | 465141  |          |             | 292151 |         |          |             | 140451 |         |          |             |


- Parameters of the treated water has been validated by third party external test periodically





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| Analysis Dates     | - | 27 <sup>th</sup> December to 1 <sup>st</sup> January 2022 |  |  |  |  |
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|          | PARAMETER               | UNITS     | RESULTS | TEST METHOD     | LIMIT          |              |                     |
|----------|-------------------------|-----------|---------|-----------------|----------------|--------------|---------------------|
|          |                         |           |         |                 | INLAND SURFACE | PUBLIC SEWER | LAND FOR IRRIGATION |
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*Test report of waste/treated water by external agency.*

**Maintenance of water bodies and distribution system in the campus**



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- The University has five Academic Blocks, one Student Resource Centre, Five Hostel Blocks, Six faculty Blocks, One Staff Quarters Block.
- AUR has total 13 Nos. of borewell located at various locations.
- All borewells are fitted with water flow meters for measurements of daily water consumption. This helps in monitoring and control of water usage.
- Water from borewell first goes to underground tanks. From underground tanks, water is pumped to overhead tanks of academic/hostel blocks.
- Water coolers with aquaguards are fitted in all the hostels and academic blocks for drinking water.
- There are 50 overhead tanks (both RCC and Sintex) and 08 underground tanks.
- Overhead tanks supply water to all occupants of buildings. All the overhead tanks are fitted with water level indicator and alarming units for ease of information to the plumbers for switching On/off, thus avoiding spillage and wastage of water.
- There are total 9 plumbers of Amity University who will take care of the maintenance work.
- There is a complaint register for all the residents, they write their complaint in the register which will be rectified by these plumbers.

