Water & Architecture
Bangalore City: Water Resources
Source: BWSSB
Bangalore City: Lakes
Source: http://www.deccanherald.com/content/25285/vanishing-lakes-time-act-now.html
Water Management

Residence

Institution

Campus

Neighbourhood

City
Water Management

Residence
Residence for Mr. Rohan & Mrs. Reshmi Eappen
Sans Souci, Bangalore
Residence for Mr. Sanjay & Mrs. Rekha Chary
Residence for Mr. Ramadurai

Residence for Mr. Prashanth Bhatt
## Sump Tank Capacity Optimization

**Tank Analysis**

- **Roof Area, Sqm**: [Blank]
- **Daily water consumption**: 600
- **Bangalore Runoff Coefficient**: 0.2
- **Total harvestable water (liters)**: 750,309

<table>
<thead>
<tr>
<th>Tank Size (liters)</th>
<th>Serviced</th>
<th>Water stored</th>
<th>Rain water used</th>
<th>Water for recharge</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Days</td>
<td>Liters</td>
<td>Liters</td>
<td>Liters</td>
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<tr>
<td>6000</td>
<td>125</td>
<td>7291.9</td>
<td>7291.9</td>
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<tr>
<td>9000</td>
<td>125</td>
<td>10942.4</td>
<td>10942.4</td>
<td>498</td>
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<td>10000</td>
<td>125</td>
<td>75039.9</td>
<td>75039.9</td>
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</tr>
<tr>
<td>11000</td>
<td>125</td>
<td>75039.9</td>
<td>75039.9</td>
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<td>12000</td>
<td>125</td>
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<td>125</td>
<td>75039.9</td>
<td>75039.9</td>
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</table>

The optimum size of the tank is 6000 lts.
<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Mini and Satheesh Residence</th>
<th>Mukherjee Residence</th>
<th>Ramadurai Residence</th>
<th>Uma Devi, Vidyaranyapura</th>
<th>Ghosh Residence</th>
<th>Sheeba and Vijay Residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plot Area</td>
<td>sq.m.</td>
<td>368.0</td>
<td>218.5</td>
<td>220.8</td>
<td>147.2</td>
<td>346.7</td>
<td>220.8</td>
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<tr>
<td>Plot coverage</td>
<td>sq.m.</td>
<td>104.9</td>
<td>132.5</td>
<td>116.0</td>
<td>75.2</td>
<td>87.8</td>
<td>127.7</td>
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<td>No. of Occupants</td>
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<td>6.0</td>
<td>4.0</td>
<td>4.0</td>
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<td>3.0</td>
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<tr>
<td>Roof Area</td>
<td>sq.m.</td>
<td>104.9</td>
<td>132.5</td>
<td>143.2</td>
<td>63.5</td>
<td>62.9</td>
<td>91.7</td>
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<td>Fresh Water Requirement</td>
<td></td>
<td>295.7</td>
<td>197.1</td>
<td>197.1</td>
<td>197.1</td>
<td>147.8</td>
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<tr>
<td>Rain water Harvested</td>
<td>KL/yr</td>
<td>83.9</td>
<td>106.0</td>
<td>114.6</td>
<td>50.8</td>
<td>50.3</td>
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<td>Grey water Treatment</td>
<td>Ltr/day</td>
<td>540.0</td>
<td>360.0</td>
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<td>360.0</td>
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<tr>
<td>Grey water Treatment</td>
<td>KL/yr</td>
<td>197.1</td>
<td>131.4</td>
<td>131.4</td>
<td>131.4</td>
<td>98.6</td>
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<td>Black Water treatment</td>
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<td>240.0</td>
<td>160.0</td>
<td>160.0</td>
<td>160.0</td>
<td>120.0</td>
<td>120.0</td>
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<tr>
<td>Black Water treatment</td>
<td>Ltr/day</td>
<td>87.6</td>
<td>58.4</td>
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<td>58.4</td>
<td>43.8</td>
<td>43.8</td>
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<td>Fresh Water From Outside</td>
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<td>124.1</td>
<td>32.7</td>
<td>24.1</td>
<td>87.9</td>
<td>53.7</td>
<td>30.6</td>
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</table>

Table showing Carrying Capacities of Six Residential Projects
Bangalore City
Bangalore City with Smart Roofed Houses
Water Management

Institution
Buddhi School, Jakkur, Bangalore
Buddhi School, Jakkur, Bangalore
Water Management

△△△ Campus
Govardhan Eco Village, Wada, Maharashtra
Govardhan Eco Village, Wada, Maharashtra
Govardhan Eco Village, Wada, Maharashtra: Hydrogeological Study
RECOMMENDATIONS

After detailed hydrogeological studies which included hydrogeological mapping, resistivity surveys, water table contouring and pumping test it is regarded that the recharge activities should also be undertaken along with measures to increase groundwater abstraction.

Measures at existing well sites

1. The shallow pond at Radhanagi near BWI is only about 2-3 m deep. This pond can be deepened to construct a dug well about 8-10 m in depth. As there is an inflow zone at about 6 m, the well is expected to yield sufficient water to suffice for agricultural purposes at Radhanagi. Currently, the shallow pond only receives water during rains from the soil rock contact and deepening it into a dug well may tap the underlying vesicular amygdoloidal basalt VAB 2.

2. The existing dug well near BW3 beside the kitchen has a very low yield. This is due to its proximity to the fracture zone. The shallow well is about 5 m deep and mostly water infiltrating from the soil zone enters the well during rains. Deepening the well is proposed to mainly to store water. The well can be deepened to about 8 m depth for store reasonable quantity of water.

New wells and borewells

1. A new borewell about 200 ft deep can be drilled near the labour cottage area. The borewell must be constructed to the SE of the BW4 already existing in the area. As apparent from the water table contour map, the groundwater flow is dominantly in the SE direction. The groundwater flow is out of ISCON property, however, a new borewell can be drilled towards the SE boundary of the Govardhan eco-village. This borewell may be used for supplying water for agricultural purposes.

2. A dug well 8 to 10 m deep is also a viable option in the labour cottage area. The dug well can be constructed to the E of the existing borewell BW4. The water from the dug well can be used for supplying water for domestic purposes.

3. Any well to the NE of the Govardhan eco village is not a viable option that is topographically high area acting as the natural recharge zone.

Recharge Measures

1. Groundwater recharge can be planned along the fracture zone F1 as shown in Figure 8, especially to the northern part of the village. Infiltration pits can be constructed in the forest area to the northern part of the plot. These infiltration pits will store rainwater briefly and enable recharge of water to the underlying aquifers.

2. Recharge dug well or borewell can also be considered in the forest area after considering the technological feasibility. The maximum depth of well can be limited to 50 m.

3. At the dyke D1 acts as a local recharge zone diverting groundwater towards the BW4. The dyke is exposed to the W of the Community cottage and can be traced along the new temple site. The dyke can also be considered for recharging groundwater. Rain water harvesting at the cottage is currently used for storing water. This can be extended for recharging through the dyke D1.

4. Rain water harvesting can also be considered at the new temple site for recharging through the dyke D1.
Govardhan Eco Village, Wada, Maharashtra: Outcome of Hydrogeological Study
Govardhan Eco Village, Wada, Maharashtra
Govardhan Eco Village, Wada, Maharashtra
GOVARDHAN ECO VILLAGE

PLAN SHOWING THE FOREST AND AGRICULTURAL AREA

Govardhan Eco Village, Wada, Maharashtra
Water Management

Neighbourhood
Rainbow Drive Layout, Bangalore
Classic Orchards Layout, Bangalore
Water Management City
Jakkur Lake, Bangalore
Jakkur Lake, Bangalore

Fig 1. The STIPLE Sustainability Model for the Jakkur Lake Revival Project

Fig 2. Diagram depicting the water cycle prevalent at Jakkur Lake.
Jakkur Lake, Bangalore