Beyond the Boundary :

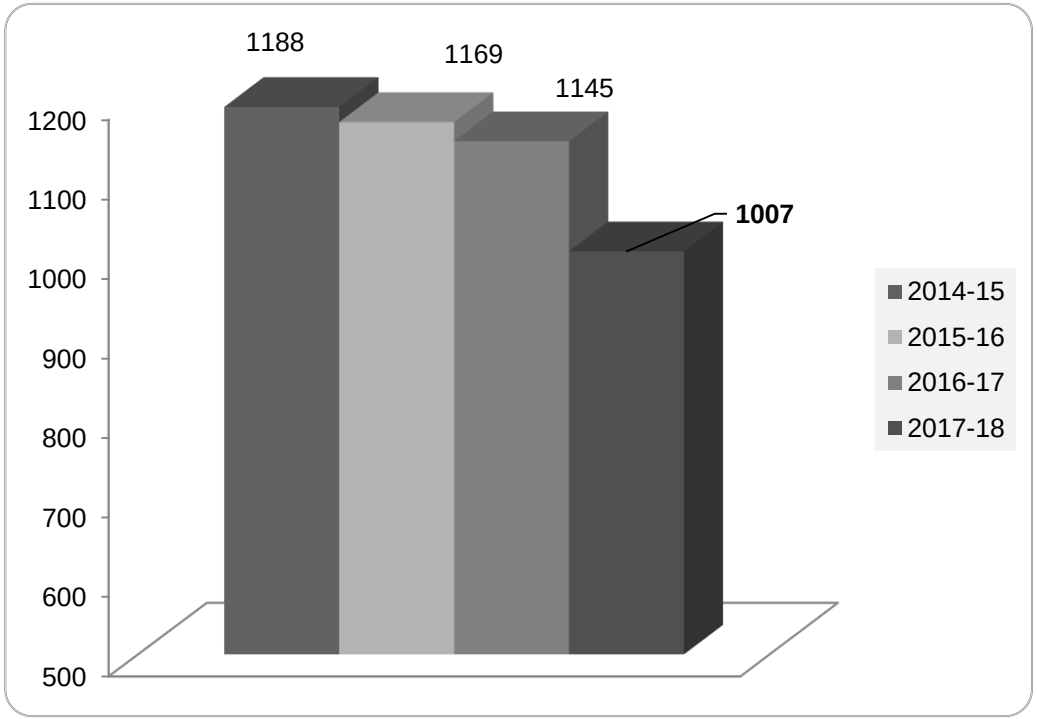
Participatory Urban Water Management , a Wipro Case Study

June 2018

Water Efficiency – a good story

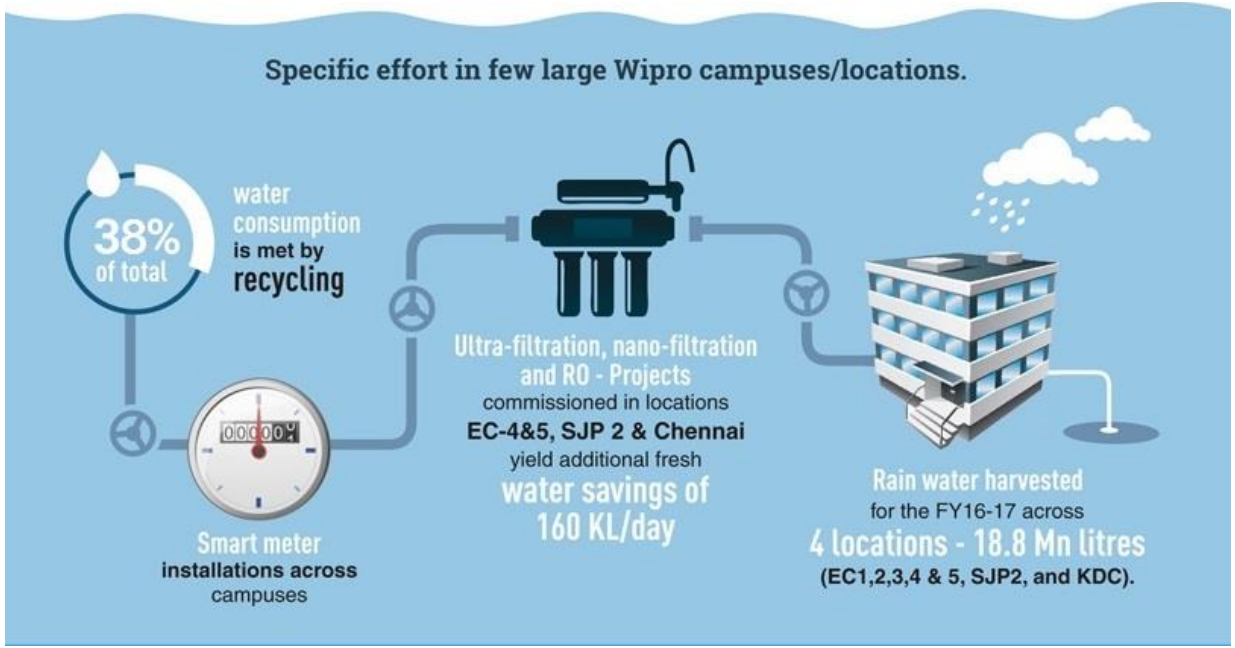
Our recycling ratio is 40 % and our water efficiency has been improving at nearly 5% on a compounded basis

Net savings and avoidance of freshwater use over four years is 2000 Million Liters of Water



Liters Per Area (Per sq mt) per year

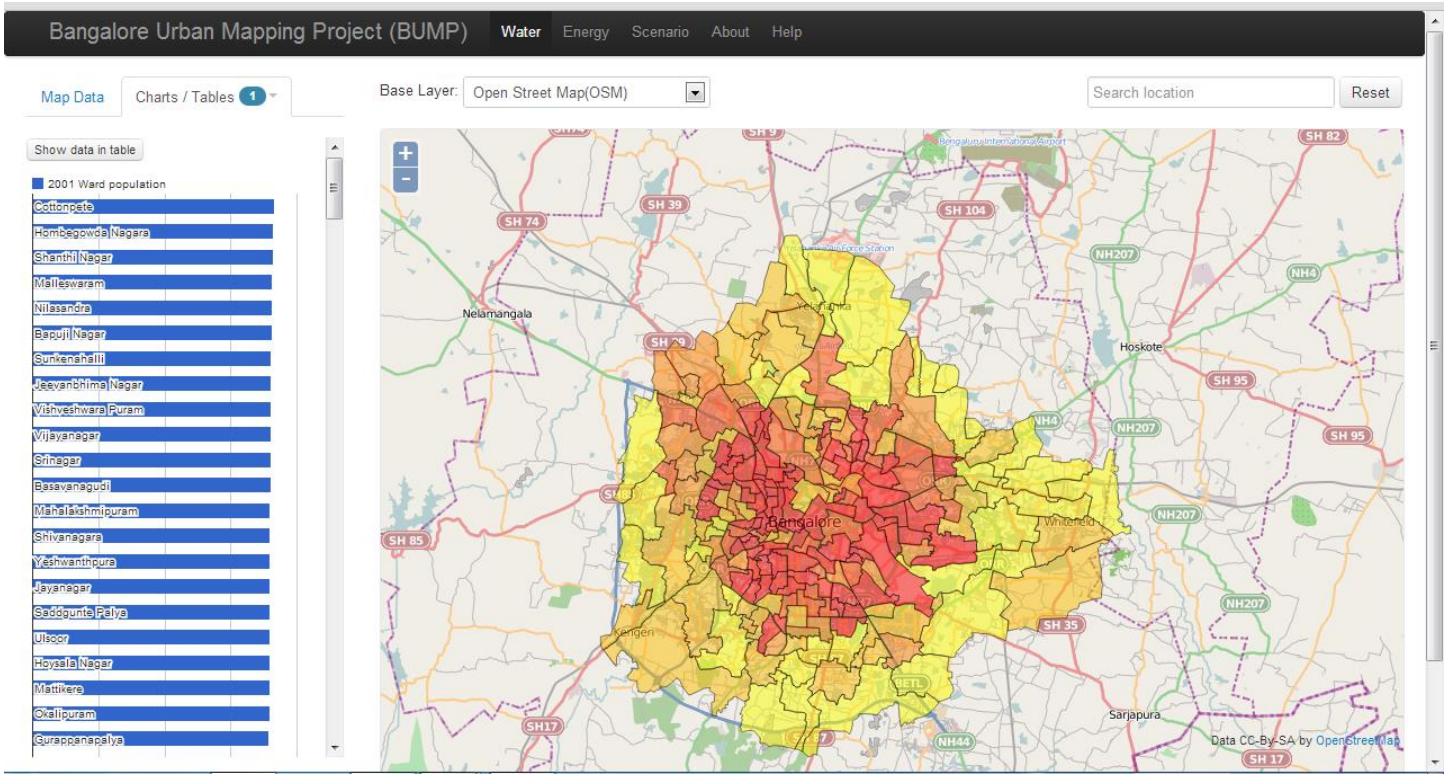
Reduction in Water Consumption – Existing Operations



- Saltless Water Softeners, by use of membranes
- Recycle of water, Use of treated water for HVAC, landscape, and flush
- Zero discharge site

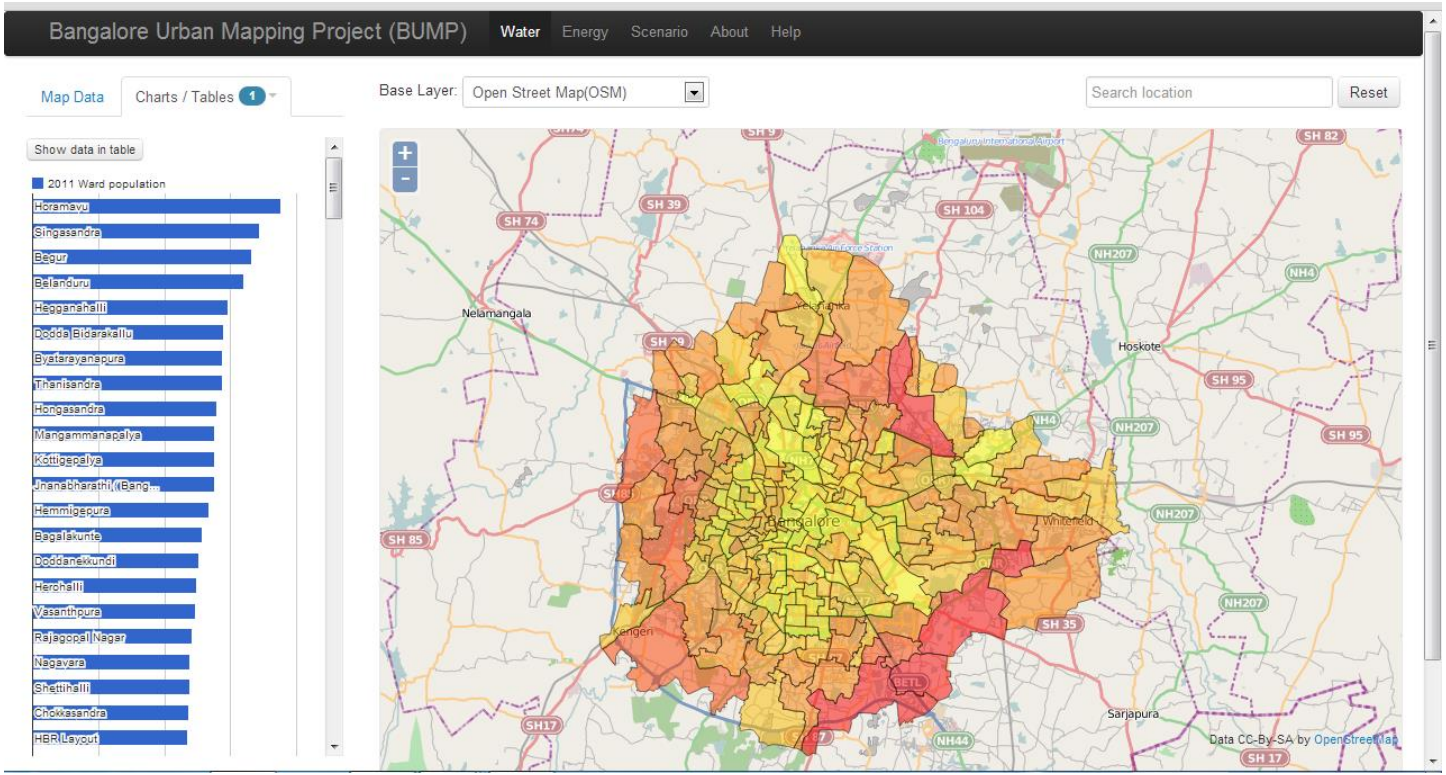
Bengaluru – 2001 wardwise population

Total population : 5.1 million



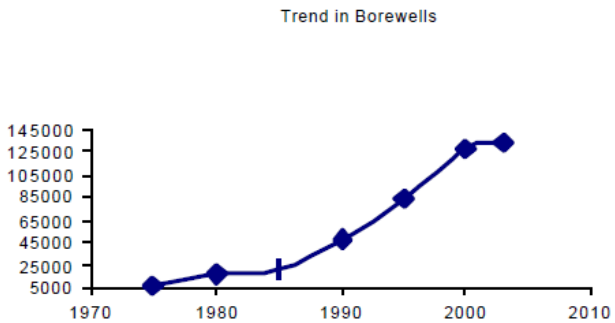
Bengaluru – 2011 wardwise population

Total population : 8.4 million (65.2% growth)



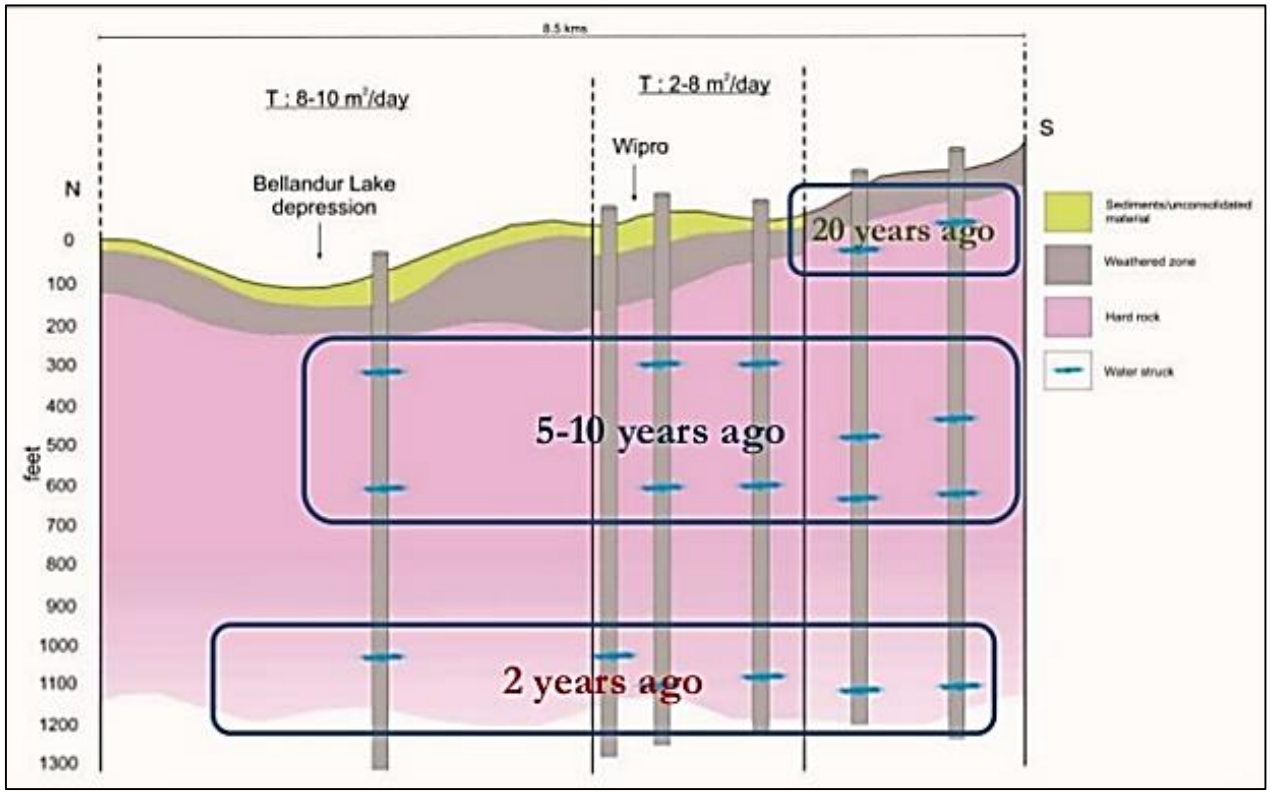
Groundwater for the “periphery”

- The “periphery” now more populous
- Groundwater primary source for the periphery
- No single source of data for number of wells or volume of water extracted
- A 2005 ISEC study estimates 200,000 to 450,000 borewells in Bangalore.



- 3000 water Tankers belonging to 100-120 water tanker companies
- Official Thyagaraja report pegs 500 + MLD, 400,000+ borewells

Falling water levels- Sarjapur watershed



…and we don’t even understand our Aquifers.

Can citizens become a part of understanding this?

Will citizens then embrace Aquifer management responses ?

Wipro's Two Pronged Approach

1.Reduce Freshwater use (Efficiency + Reuse)

2. Enhance rainwater harvesting

Within the Fence:

1. Groundwater science led assessment

2. Decentralized governance models

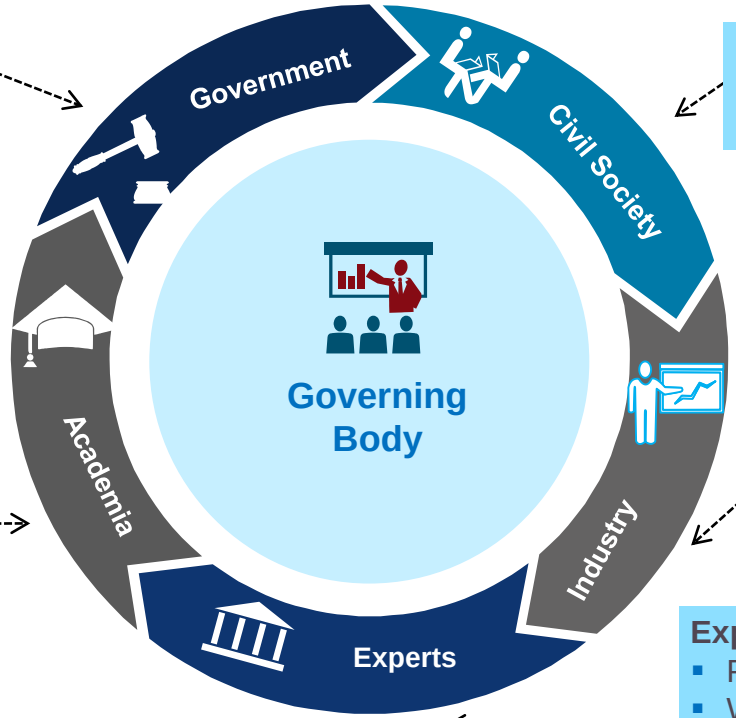
Outside the Fence

An integrated perspective on water risk and security

Karnataka State Water Network (KSWN) – A platform that brings together government, business and civil society

Objective: Integrate and Synergize multiple disparate initiatives - projects, programs, research, civil society initiatives in the field of water

- **Government**

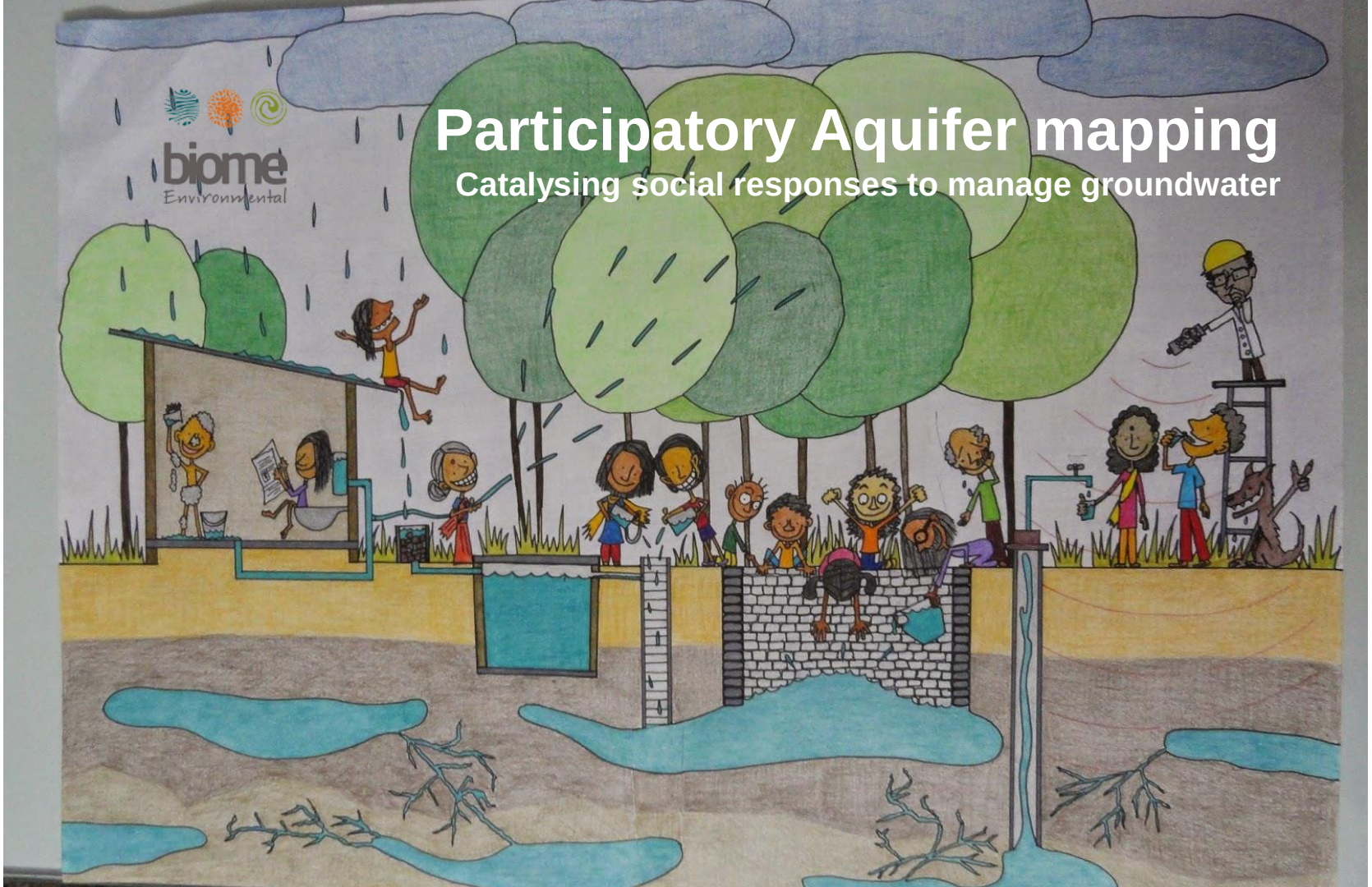


- Eminent Citizens
- NGOs

Academia & Research -
- Experts from various institutions

- CII
- Corporates

Experts/Consultants -
- Public policy
- Water Technology
- Finance



Participatory Aquifer mapping

Catalysing social responses to manage groundwater

Year 1 (‘14-15)

1. Detailed aquifer mapping exercise of 33 Sq KM area
2. Baseline assessment
3. Extensive dialogues with citizen groups and other stakeholders

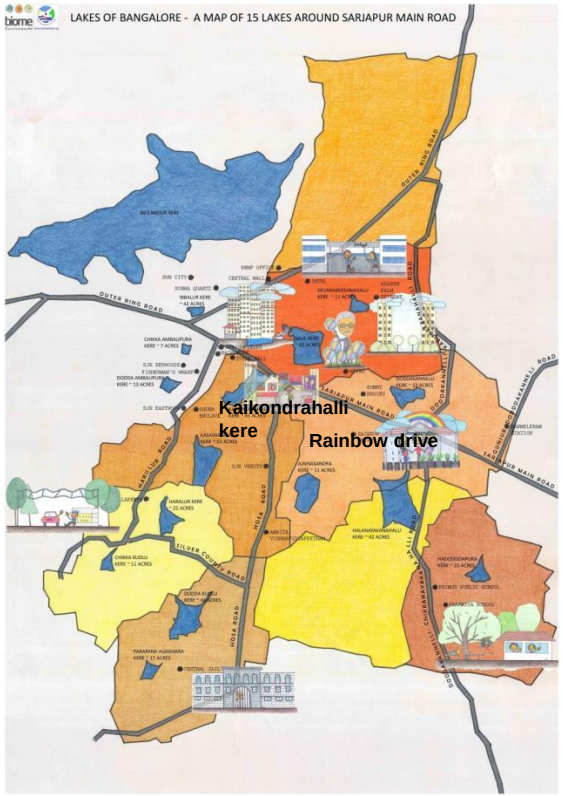
Year 2 (‘15-16)

1. Aquifer map completed ; Initial analysis highlights more central role for shallow aquifer
2. VES studies for finetuned groundwater map contours
3. Extensive communication and advocacy with various stakeholders

Year 3 (‘16-17)

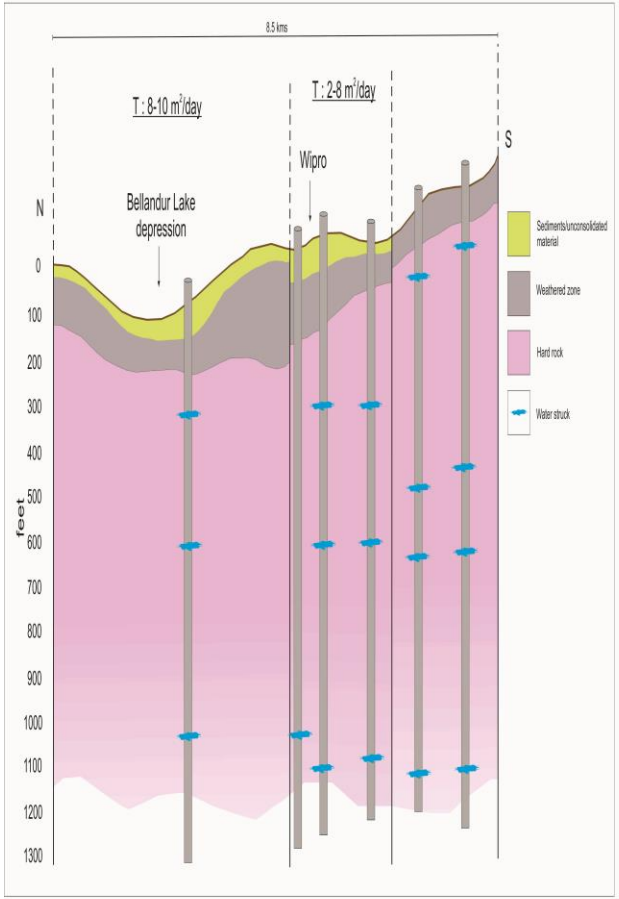
1. In-depth assessment of the potential of shallow aquifers in Adarsh Palm Retreat, a residential complex
2. Role of lakes assumes special significance
3. Citizen and government advocacy continues

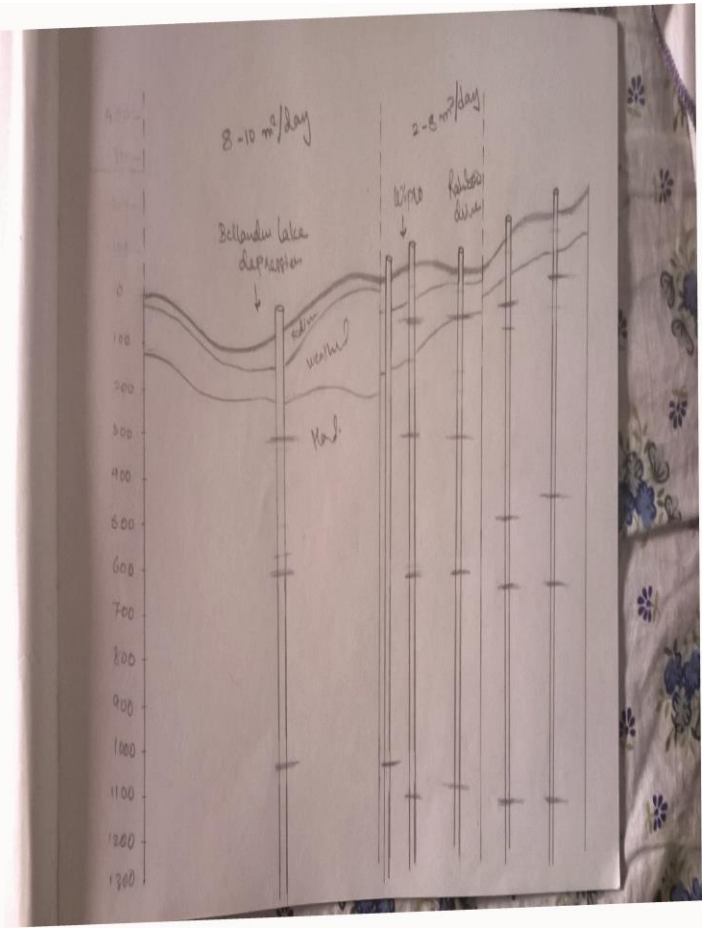
8 Micro-watersheds in the Upper Ponnaiyar Watershed



- South east of the city, 8 micro-watersheds
- Completely groundwater driven. No piped supply when started
- 33 Sq km, multiple wards + a panchayat (Halanayakanahalli panchayat)
- 15 lakes (in and out of BBMP)
- Mixed land use – residential, commercial, institutional & peri-urban
- Census 2011 : Residential population: 117,844 in BBMP area & 9797 in panchayat areas

Draft Aquifer Map: Hydrogeological Section





Hydrogeology : Some insights into Aquifers

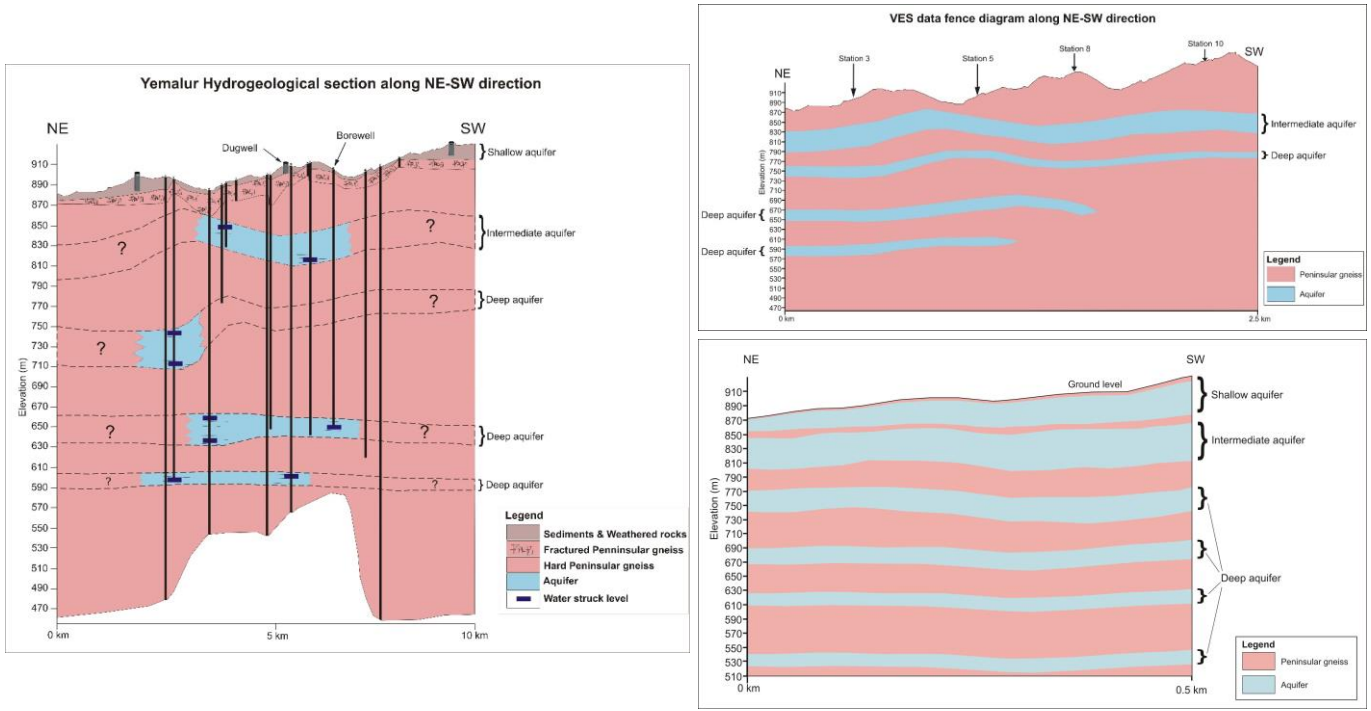
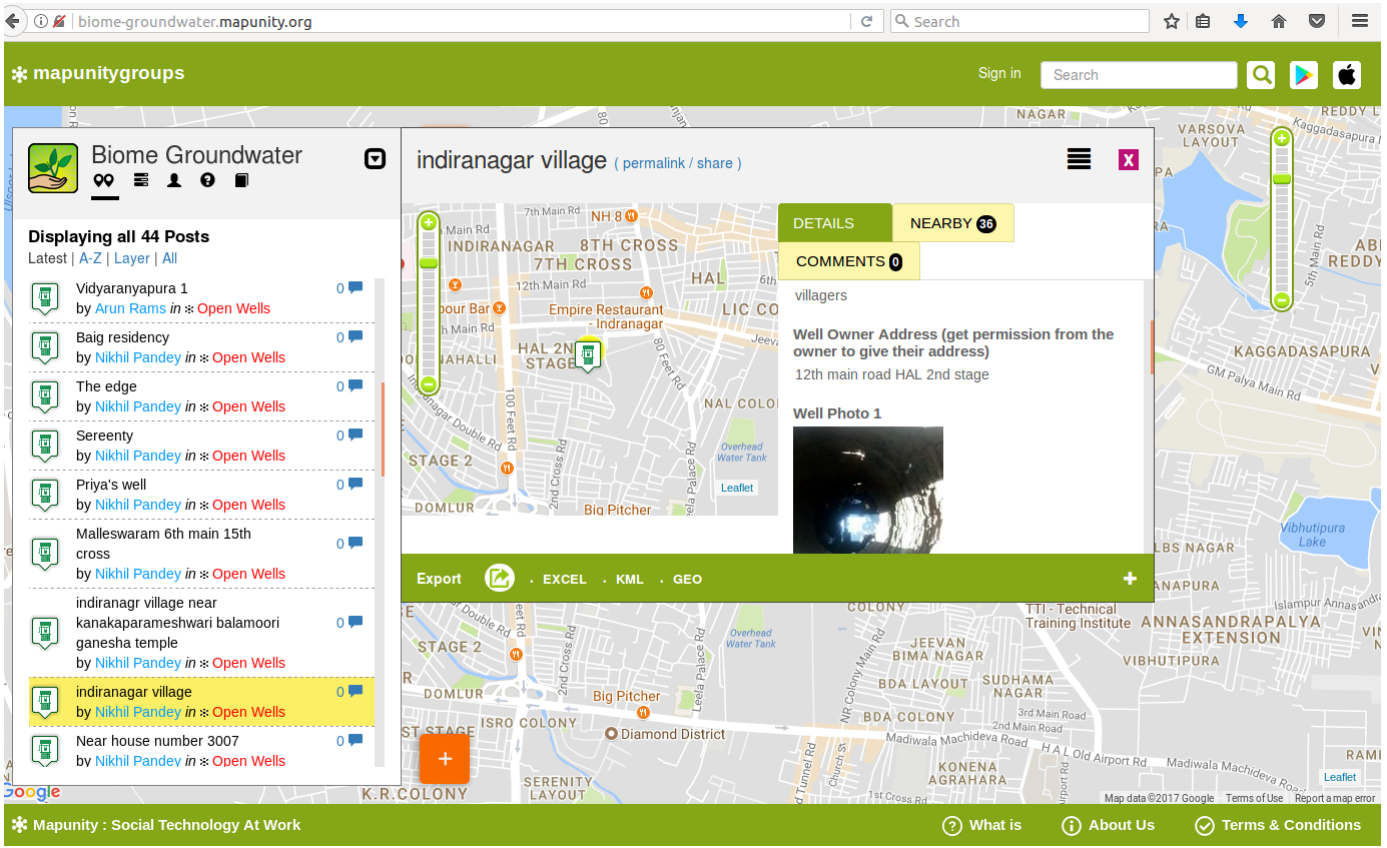


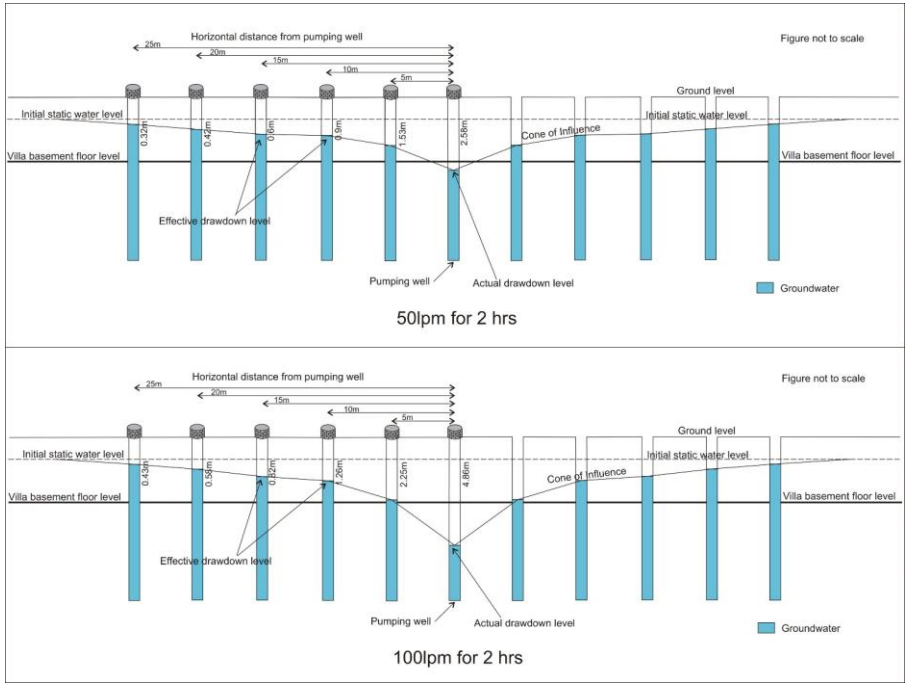
Fig 9: Narrative data *based hydrogeological section along NE-SW of the watershed*

Open Well Mapping

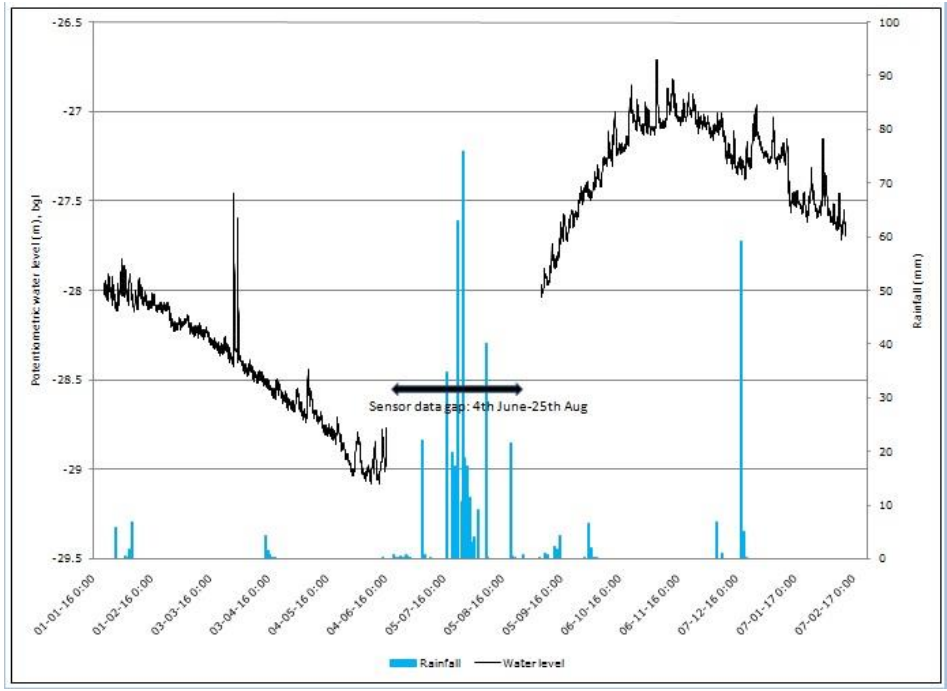


Clusters and Monitoring Wells

APR cluster



RBD cluster



KK halli cluster

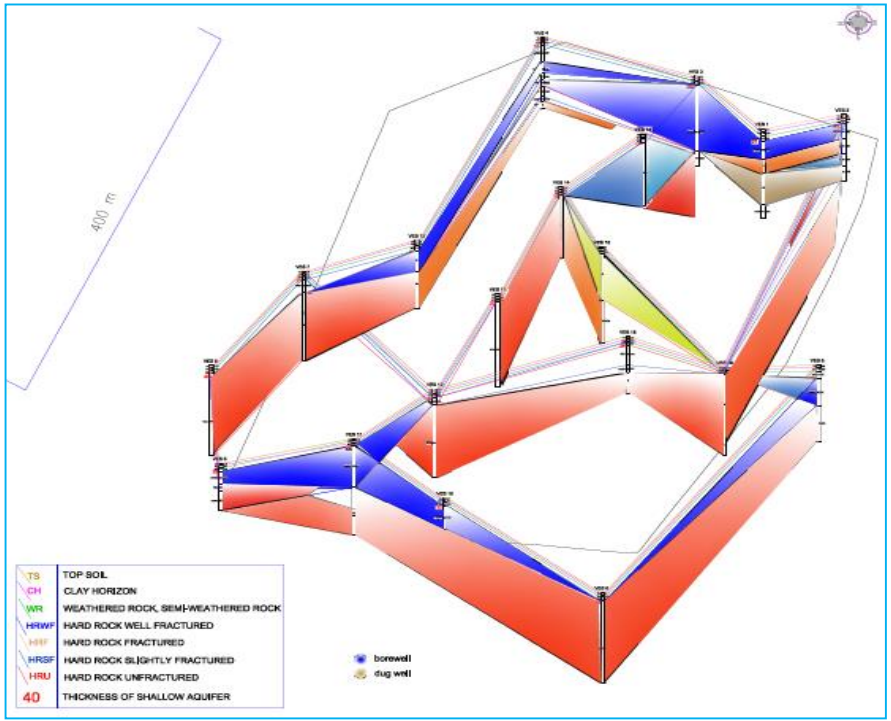
Monsoon – Lake to Shallow Aquifer

Lake recharging

Dry Season – Shallow Aquifer to Lake

Shallow aquifer recharging

Sustainable Water Management for the new Wipro campus, Kodathi



- Geophysical study for new campus in Bangalore: Identify groundwater yield zones, subsurface soil profile and groundwater movement.
- Create alternate source of fresh water through rain water harvesting
- Locate the borehole positions in the most productive zones
- Study aquifers with recharge capabilities
- Get to 70% self-sufficiency

Engaging the government

KSPCB Citizen dialogue

KSPCB visit to Rainbow Drive

Lake Primer – detailed 101 for understanding and helping rejuvenate Bangalore Lakes

Emerging conclusions and their implications

Shift the paradigm back from ‘Deep’ to ‘Shallow’	• Shallow aquifers can be used effectively as more sustainable sources of water • Use the approach of ‘shallow recharge’ wells’ and ‘open withdrawal wells’
What will it take ?	• Meticulous management of solid waste and wastewater. No infiltration should be allowed • Lakes in the proximity of open wells can act as effective sources of recharge
What about deep borewells ?	• Increasing evidence of no yield below 600 ft – so, rather invest in recharge • Use dried up borewells as possible recharge points by connecting to clean rooftop harvests

Wipro - BMTC Mobility Initiative

Wipro geocodes its employees' proximity to BMTC bus routes

THE HINDU BusinessLine

Objectives:

Popularize use of public transportation within Wipro

Create a sustainable feedback mechanism between the local transport utility and its users

Foster an economic, efficient, and convenient public transport system

Approach:

Survey and record employee addresses and their travel preferences and patterns

Analyze data from 11,000 respondents

Work with BMTC, the local public transport provider, to address gaps in service

Now, get a direct, quicker bus ride to Electronics City

DECCAN HERALD