# Advisory on Jal Sanchay Jan Bhagidari (JSJB) initiative under Jal Shakti Abhiyan: Catch the Rain

## 1.0 Background:

Inspired by the Hon'ble Prime Minister's impetus on jal sanchay in his Mann ki Baat speech, the Jal Shakti Abhiyan (JSA) was launched in the year 2019 in 1,592 blocks out of 2,836 blocks in 256 water stressed districts of the country. JSA could not be taken up in 2020 due to Covid pandemic. In 2021, "Jal Shakti Abhiyan: Catch the Rain" (JSA: CTR) with the theme "Catch the Rain – Where it Falls When it Falls" was launched by Hon'ble Prime Minister subsuming Catch the Rain campaign to cover all the blocks of all districts (rural as well as urban areas) across the country. "Jal Shakti Abhiyan: Catch the Rain" campaign has now become an annual feature and the fifth edition of JSA was launched on 09.03.2024 with the main theme "Nari Shakti se Jal Shakti".

Gujarat has emerged as a commendable model for effective water conservation practices by leveraging Corporate Social Responsibility (CSR) funding. The state has successfully mobilized community participation alongside industries and local bodies, leading to the completion of around 10,000 borewell recharge structures this year in districts such as Surat, Navsari, Valsad, Tapi, and Dang.

**2.0 Launch of Jal Sanchay Jan Bhagidari (JSJB) initiative**: To further strengthen the momentum of Jal Shakti Abhiyan: Catch the Rain and to build upon the success of the Jal Sanchay model of Gujarat, the "Jal Sanchay Jan Bhagidari," a collaborative effort with community partnership, has been launched in Surat, Gujarat on 06.09.2024. The initiative aims to enhance water recharge through rainwater harvesting/aquifer recharge/borewell recharge/ recharge shafts etc. with resource support from Government & non-Government resources like CSR funds, industrial houses, civic bodies, water sector enthusiasts etc. collectively working towards ensuring a water secure future.

## 3.0 Goals of the JSJB initiative:

The JSJB initiative aims to construct a million recharge structures, including check dams, percolation tanks, and recharge wells, to enhance groundwater replenishment. The initiative will ensure:

1. **Boost in Groundwater Levels**
   Capture and store rainwater and surface runoff to stabilize and increase groundwater levels, thereby preventing waste and promoting efficient water usage.
2. **Promotion of Water Conservation**
   Foster a culture of water conservation by engaging communities in local water resource management and emphasizing the significance of rainwater harvesting.
3. **Enhancement of Climate Resilience**
   Mitigate the impacts of climate change by developing storage solutions for heavy rainfall and providing a buffer against droughts, thereby increasing community resilience to climate variability.
4. **Improvement of Water Quality**
   Utilize artificial recharge methods to naturally filter water as it percolates through soil layers, reducing salinity and contamination, and thereby enhancing water quality for both drinking and agricultural purposes.

**4.0 Objective**: The key objective of the Jal Sanchay Jan Bhagidari initiative is to ensure that every drop of water is conserved through collective efforts, following a whole-of-society and whole-of-government approach. By promoting community ownership and responsibility, the initiative seeks to develop cost-effective, local solutions tailored to specific water challenges across different regions. The central goal is the construction of at least 1 million recharge shafts, with around 25,000 already being made, to enhance groundwater levels and support sustainable water management practices throughout the country.

**5.0 Idea behind the initiative:**

Rainwater harvesting for groundwater recharge is a technique aimed at collecting and storing rainwater in subsurface aquifers to augment supplies to aquifers those depleted by excessive groundwater extraction. This harvested rainwater helps meet local groundwater demand for various purposes. Several types of artificial recharge structures are utilized, including rainwater harvesting systems in public and private buildings, injection borewells, recharge pits, restoration of open wells and recharge wells in lakes and heritage wells. Other methods include catchment area treatment, recharge shafts, pond stabilization and stepwell restoration. Additionally, storm water drainage is directed into

water bodies, and defunct hand pumps, power pumps, borewells & open wells are restored to enhance groundwater recharge capacity. The initiative encourages repurposing of abandoned borewells and mines for groundwater recharge. By converting these unused resources into recharge structures, the initiative taps into cost-effective methods for enhancing groundwater levels. It is advised to prioritize the construction of small, localized artificial recharge structures tailored to community needs. On analysing the data available on the dashboard, it has emerged that small recharge shafts can cost as little as ₹15,000 to ₹25,000, while standard rainwater recharge structures typically range between ₹1 lakh and ₹1.5 lakh. With millions of such structures envisioned under the Jal Sanchay Jan Bhagidari initiative, these cost-effective solutions are crucial for replenishing groundwater and strengthening water security across the country.

## 6.0 Action Plan for Implementation:

- Each district is tasked with ensuring that all villages have at least five recharge structures to capture and store rainwater in a mission mode.
- Every Municipal Corporation has been requested to aim to establish a minimum of 10,000 recharge structures within its jurisdiction in a mission mode.
- Each central ministry/department has been requested to utilize their existing schemes and resources to support the extensive construction of artificial recharge structures. Ministries are also encouraged to establish self-targets based on available land and office premises to expedite implementation and ensure wide-scale impact. The Action Plan is expected to review the existing recharge structures, maintain them and upload on the JSJB portal. It is proposed that all Office Headquarters, Directorate, Regional Offices, District Offices, Attached & Subordinate Offices, Corporations, Autonomous bodies, training institutions, staff quarters, field units etc. are saturated with rainwater harvesting recharge structures to replenish the ground water from their own resources in a mission mode.
- Public and private bodies such as Schools, Universities, Hostels, Anganwadis, FPOs, etc. are encouraged not only to prioritize the construction of recharge structures to maximize water conservation efforts within their premises but also to renovate existing recharge structures and repair of defunct structures.

- Urban and Rural local bodies are urged to take responsibility for the maintenance and monitoring of these recharge structures, ensuring their long-term effectiveness in conserving groundwater.
- Collaboration with Industries, PSUs and non-profit organizations has been solicited not for profit but to secure funding for these initiatives.
- Engaging Panchayats, Water Users Associations (WUA), Self-Help Groups (SHG), Resident Welfare Associations (RWAs) and private citizens in actively participating in the construction of recharge structures.
- Leveraging Government, CSR and private sector funds to maximize the impact and reach of these water conservation efforts.
- Convergence of government, CSR and private funds.

## 7.0 Monitoring mechanism:

- A sub-portal has been launched under the Jal Shakti Abhiyan: Catch the Rain (JSA: CTR) initiative. This portal is live and dedicated to capturing data on artificial recharge structures across the country, aimed at promoting water conservation efforts. The information of all identified, ongoing and completed structures has to be uploaded on the JSJB dashboard as below: https://jsactr.mowr.gov.in/jsjb.aspx.
- Login credentials for data uploads on the portal have been shared with all District Magistrates (DMs) and Deputy Commissioners (DCs) in every State and Union Territory.
- All 254 Municipalities across the country have also been provided with login credentials to facilitate their participation in data submission.
- Partner ministries and departments have been requested to nominate nodal officers for data entry on the portal.
- A user ID and password to the nodal officer has been assigned, who can then add as many users as needed. There is also an "Add User" tab for adding the new user as per requirement. Request for user Id and password can be e-mailed on jsactr-nwm@gov.in. Additionally, we are developing an Excel format that can be submitted to upload user details in bulk.

## 8.0 Artificial recharge of ground water:

- Any man-made facility that adds water to an aquifer may be considered as artificial recharge (CGWB, 1994) Artificial recharge aims at augmenting the natural replenishment of ground water storage by some

method of construction, spreading of water, or by artificially changing natural conditions.

- Natural replenishment of ground water reservoir is a slow process and is often unable to keep pace with the excessive and continued exploitation of ground water resources in various parts of the country. This has resulted in declining ground water levels and depletion of ground water resources in such areas. Artificial recharge efforts are basically aimed at augmentation of the natural movement of surface water into ground water reservoir through suitable civil construction techniques.
- Besides other reasons, a large percentage of artificial recharge projects are designed to replenish ground water resources in depleted aquifers and to conserve water for future use.
- Artificial recharge is becoming increasingly necessary to ensure sustainable ground water supplies to satisfy the needs of a growing population.
- Successful implementation of artificial recharge schemes will essentially have major components including assessment of source water, planning of recharge structures, finalisation of specific techniques and designs, monitoring and impact assessment, financial and economic evaluation and operation and maintenance.

## 9.0 Artificial Recharge Techniques:

Techniques used for artificial recharge to ground water broadly fall under the following categories

**I) Direct Methods**

**A) Surface Spreading Techniques**

a) Flooding
b) Ditch and Furrows
c) Recharge Basins
d) Runoff Conservation Structures
   i) Bench Terracing
   ii) Contour Bunds and Contour Trenches
   iii) Gully Plugs, Nalah Bunds, Check Dams
   iv) Percolation Ponds
e) Stream Modification / Augmentation

**B) Sub-surface Techniques**

a) Injection Wells (Recharge Wells)

b) Gravity Head Recharge Wells

c) Recharge Pits and Shafts

**II) Indirect Methods**

A) Induced Recharge from Surface Water Sources;

B) Aquifer Modification

i) Bore Blasting.

ii) Hydro-fracturing.

**III) Combination Methods**

In addition to the above, ground water conservation structures like Subsurface dykes (Bandharas) and Fracture Sealing Cementation techniques are also used to arrest subsurface flows.

**IV) For further details on Artificial Recharge Structures,** may please refer to the manual of Central Ground Water Board on Artificial Recharge Structures which is available in public domain.

## 10.0 Outcomes:

- Enhanced groundwater levels to support local water needs.
- Strengthened collaboration and involvement of communities in water conservation efforts.
- Greater public awareness about the importance of water conservation and sustainable practices.
- Extensive development of artificial recharge structures, even at grassroots levels.

## 11.0 Enclosures:

i. Template for data entry in excel sheet format-(Annexure I)

ii. CGWB guidelines on construction of recharge borewells-(Annexure II)

iii. Sample design for the artificial recharge structures from Navsari district of Gujarat- (Annexure III)

iv. Photo Gallery- (Annexure IV)

# Annexure I

**Template for Data Entry (Annexure I)**

| Sr No | State LG Code | State Name | District LG Code | District Name | Area Type | BlockTown LG Code | BlockTown Name | VillageWard Lg Code | VillageWard Name | TypeOfStructureId | TypeOfStructureName | Location of Structure | Latitude | Longitude | WorkStatusId | Work Start Date | Work Completion Date | SourceOf FundsId | Amount | CommunitiesInvolvedId | Structure Image 1 | Structure Image 2 | Structure Image 3 | Created By Email Id |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | R | Block | Block | Village | Village | 1 | Groundwater Recharge Structure | | | | Work Status (Pls refer source sheet) | | | Source of Fund (Pls refer source sheet) | | Communities Involved (Pls refer source sheet) | | | | |
| 2 | | | | | U | Town | Town | Ward | Ward | 1 | Groundwater Recharge Structure | | | | | | | | | | | | | |

| WorkStatusId | WorkStatusName |
|---|---|
| 7 | Ongoing |
| 8 | Completed |

| SourceFundId | SourceFundName |
|---|---|
| 1 | MGNREGA |
| 2 | AMRUT |
| 3 | PMKSY |
| 4 | CAMPA |
| 5 | Finance Commission Grants |
| 6 | State Government Schemes |
| 7 | CSR Funds |
| 8 | District Mineral Funds |
| 9 | Community Fund |
| 10 | NGO/SHGs Fund |
| 11 | Philanthropic Contributions |
| 12 | Industrial Donations |
| 13 | Crowd Funding |
| 14 | Individual Donors |
| 15 | RIDF (Rural Infrastructure Dev. Fund) |
| 16 | MP/MLA Local Area Development Scheme (LADS) |
| 17 | Other Central Fund like BADP |
| 18 | Others |

| CommunitiesInvolvedId | CommunitiesInvolvedName |
|---|---|
| 1 | SHG (Self Help Gr.) |
| 2 | WUA (Water User Association) |
| 3 | NGO |
| 4 | Others |
| 5 | CSR/Private |

# Construction of Recharge Wells

## 1. Introduction

Rainwater available from rooftops of buildings, paved and unpaved areas in building premises, parks, etc can be used for recharging suitable aquifers. Ministry of Jal Shakti is promoting groundwater conservation including construction of recharge wells in building premises, parks etc.

This document provides broad guidelines in respect of the following two interventions

1. Low Cost Recharge well for Rooftop Rainwater Harvesting
2. Recharge well for harvesting overland flow

## 2. Recharge well for Rooftop Rainwater Harvesting

When the catchment is a rooftop, which means when the water from the rooftop is being collected, the typical components will include

1. Roof catchment
2. Drain pipes/Gutters
3. Down pipe
4. Arrangements for First flush,
5. Pit with Filter material
6. Bore Well (hard rock) /Tube well (soft rock)

Typically the interventions Construction of Recharge Bore well/tube well structure for Rainwater Harvesting

1. Excavating a pit of suitable size. Size of the pit will depend on catchment area, average rainfall, and soil infiltration rate. The pit should be large enough to ensure that the system can handle the volume of water generated during peak rainfall. Usually a pit of 6 cubic meter (2m X 2m X 1.5m) is sufficient for a roof area of 100 sq m and a daily rainfall of 20 mm. Larger pit or multiple pits may be required for larger catchments.
2. Construction of Pit wall (masonary). Alternatively, prefabricated containers can be put inside the pit for stabilisation of the pit wall. Such pre-fabricated material needs to made up of non-toxic durable material and should have openings on the wall and the bottom.
3. Installation of a cover on the pit.
4. Drilling of the recharge well: A tubewell or borewell is to be constructed within the pit. Depth of the borehole will depend upon the depth of the target aquifer of the area. In areas where the aquifer is exposed at the surface, a borewell may not be required.
5. Installation of well assembly or casing: PVC pipes (including perforated PVC pipes) can also be used to reduce cost.

6. Gravel packing (gravels placed in the annual space between the well assembly and the wall of the naked borehole).
7. Well development by pumping of the well constructed (if it is not a dry well)
8. Installation of well cap
9. Filling the pit (around the borewell) with filter material (Boulder, Pebble and course sand).
10. Approximately cost of structure will be around Rs. 35,000/= to Rs. 50,000/= (site specific).

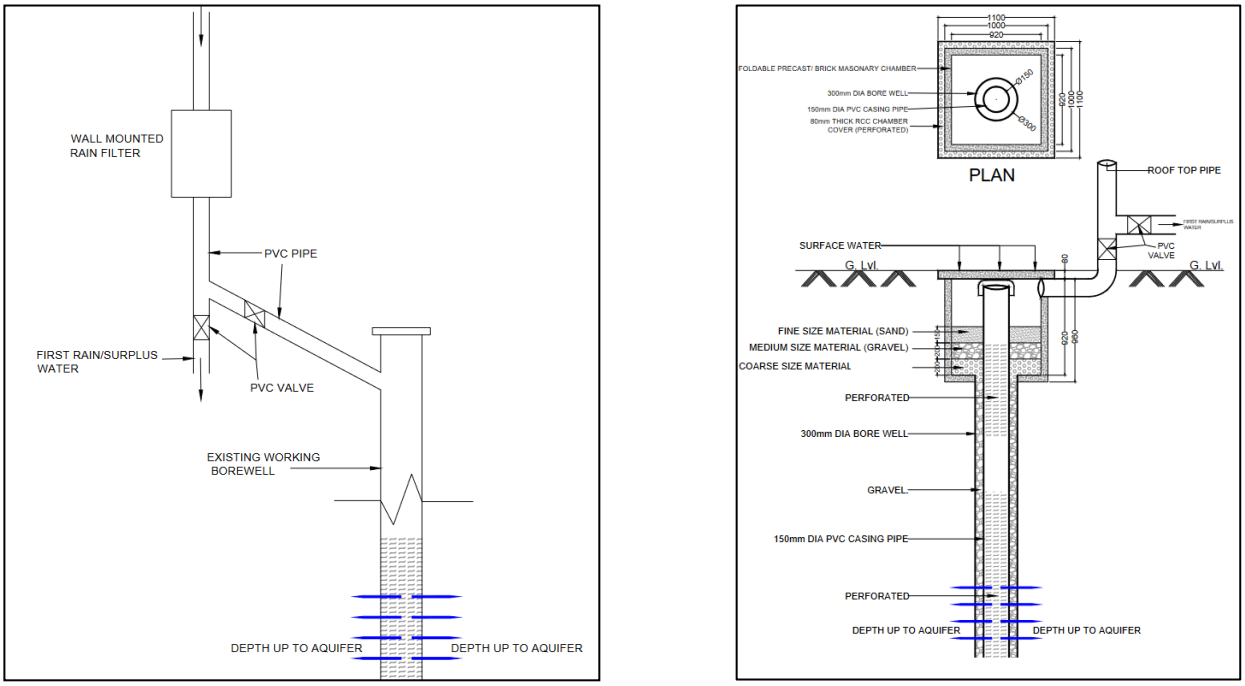



**Fig.1**: Indicative designs of recharge well for low cost rooftop rainwater harvesting.

## 3. Recharge well for harvesting overland flow

1. When the catchment is other than rooftop, like open area in a garden, the overland flow can also be recharged through borewells/ tubewells. However, in such cases, silt load is likely to be high. Accordingly, in addition to the interventions described in the previous section, a silt trap is also required to be installed.
2. The silt trap is another pit, without the filter material within it and will include interventions at sl no. 1, 2 and 3. The overflow of this pit can be fed to the recharge pit. Without a silt trap, it is likely that the recharge structure can get clogged after initial rain episodes. Silt trap is required when the catchment is other than a rooftop.
3. For Alluvial areas the cost of recharge well structure will be approximately Rs. 1.5 lakhs and in hard rock formations the cost will be Rs.1.0 lakh, for the depth of 30 m.

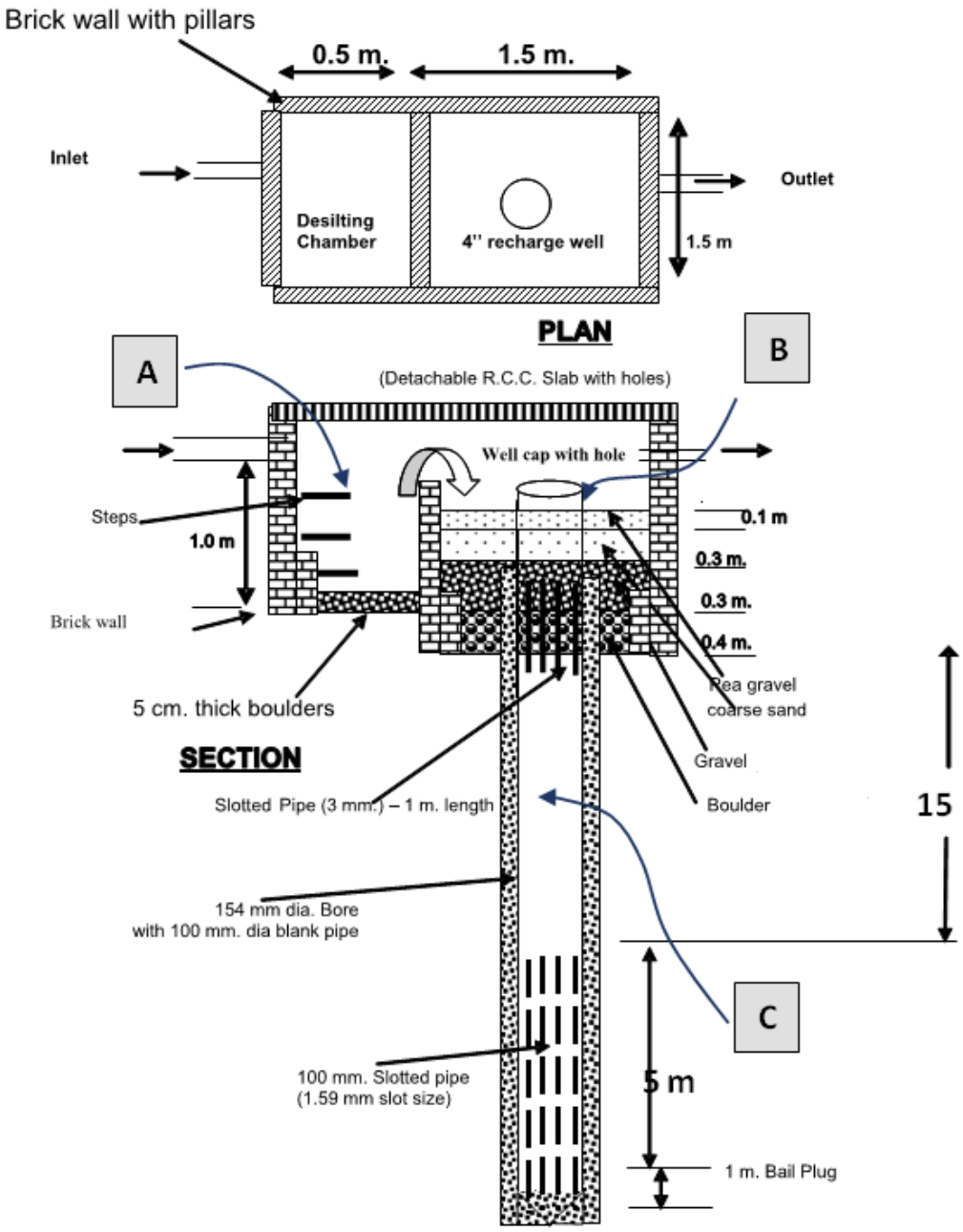



**Fig.2:** Indicative designs of recharge well with a pit for harvesting overland flow. Please note: 1. Dimensions of the pits (A and B) and depth of the recharge well (C) may vary depending upon site specific conditions, 2. In suitable conditions, the pit can be left open, 3. Further depending on the site specific conditions, the recharge well may not be required. Please refer the previous section for details (Standard design of CGWB).

# JAL SANCHAY ABHIYAN

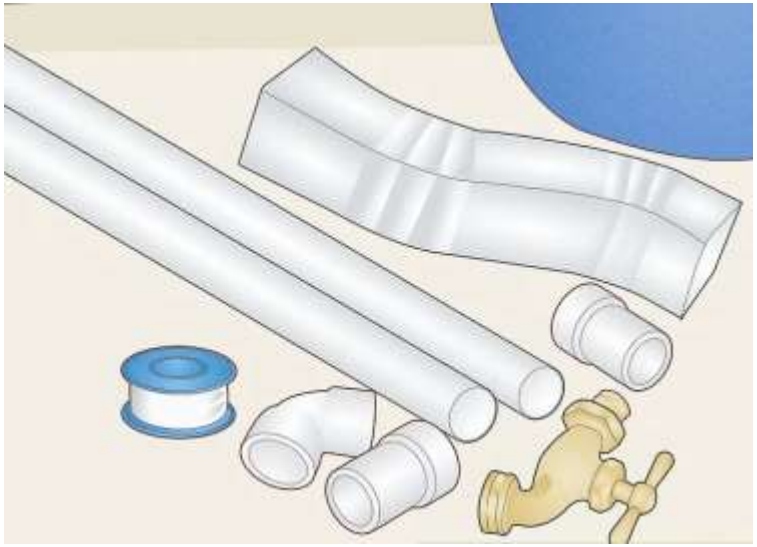
Annexure III

जल शक्ति अभियान
संचय जल, बेहतर कल

JAL SHAKTI ABHIYAN
Sanchay Jal, Behtar Kal

# COMPONENTS OF JAL SANCHAY SYSTEM

1) Reusing Plastic Barrel Cans



02) Pipes for Rainwater collection from terrace area

03) Gravels for Adjacent pit filling

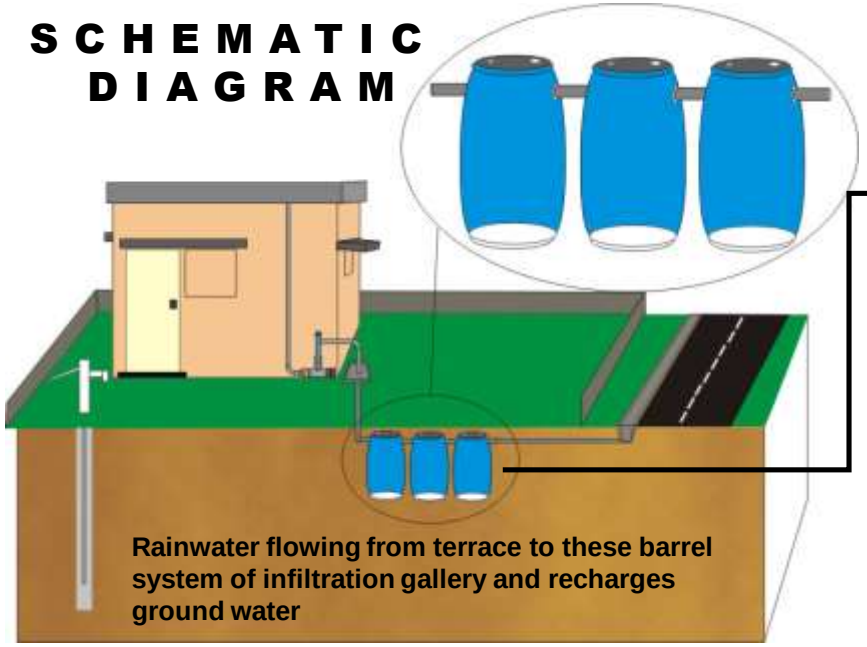
04) Lid Covering at Top

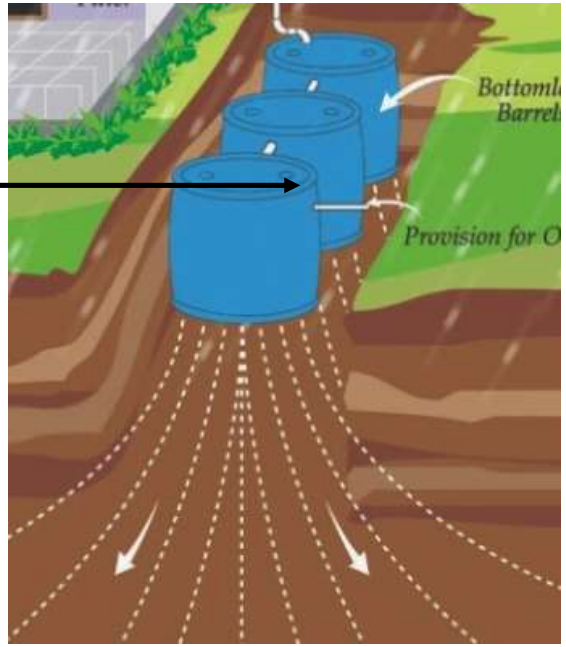
05) PVC Slotted Pipe

06) Jali to avoid penetration of dust particles

# FUNCTIONING OF JAL SANCHAY SYSTEM

**S C H E M A T I C  D I A G R A M**



01) Identify an open space around a building to create ground water recharge system .

Excavate earth to a depth of 6 ft. from the ground level. The width of excavated pit must be slightly more than the diameter of the plastic used oil barrel

02) Take required number of plastic barrels (each of around 200lts.) and make holes on entire sides barrels

03) Before keeping barrel inside pit Drill hole upto 15 to 20 ft of diameter 200 or 230 mm depending upon water bearing strata and insert 200 or 150 mm dia pvc pipe with slotted holes and fixed with gravels packing in it.

04) Fill remaining pit outside barrel with gravels

05) Cover barrel top with lid so that whenever any one walks on it remains protected

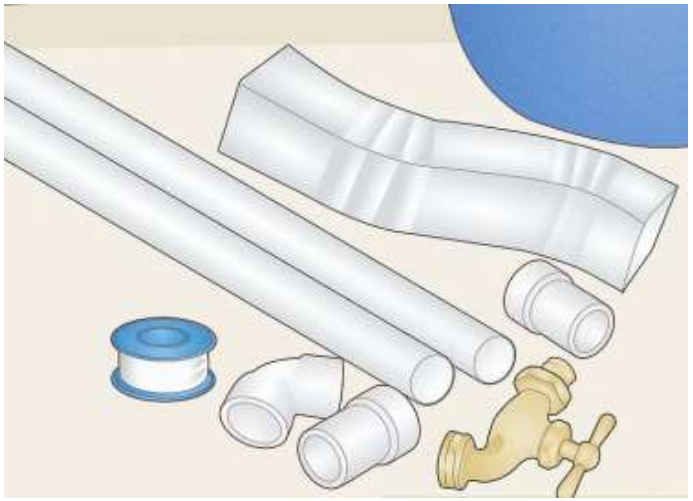
06) Add jali/cover it with cloth to main rain water pipe that is collecting rain water and transferring it to system so that sand or dust particles doesn't get chocked up which needs to be maintained at timely intervals

07) Whenever rain occurs all water from terrace surface gets transferred to barrels and ground water is recharged naturally.

**This system is extremely efficient and cost effective solution for ground water recharging**

# STEPS FOR CONSTRUCTION OF JAL SANCHAY SYSTEM

01) Reusing Plastic Barrel Cans



02) Pipes for Rainwater collection from terrace area

03) Location identification

04) Excavation

05) Excavation Completion

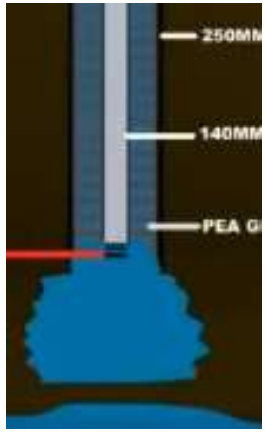
06) Barrel Positioning inside pit

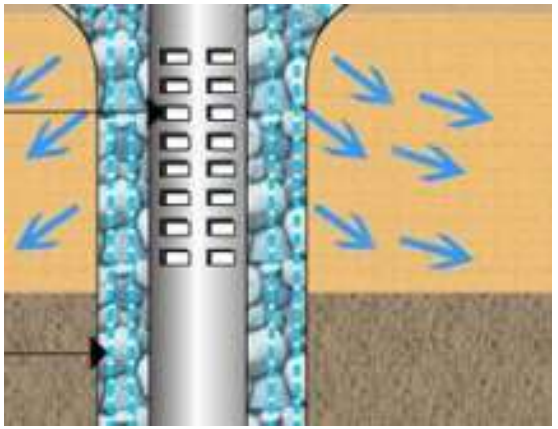
# STEPS FOR CONSTRUCTION OF JAL SANCHAY SYSTEM

07) Gravel Filling at Periphery and inside entire pit and covering it from top with lid

08) Covering Pipe with Cloth for filtration from pebbles or rocks

09) Fixing with Jali at top to avoid penetration of dust particles in side from top covering



150/200 mm PVC slotted pipes with gravel packing

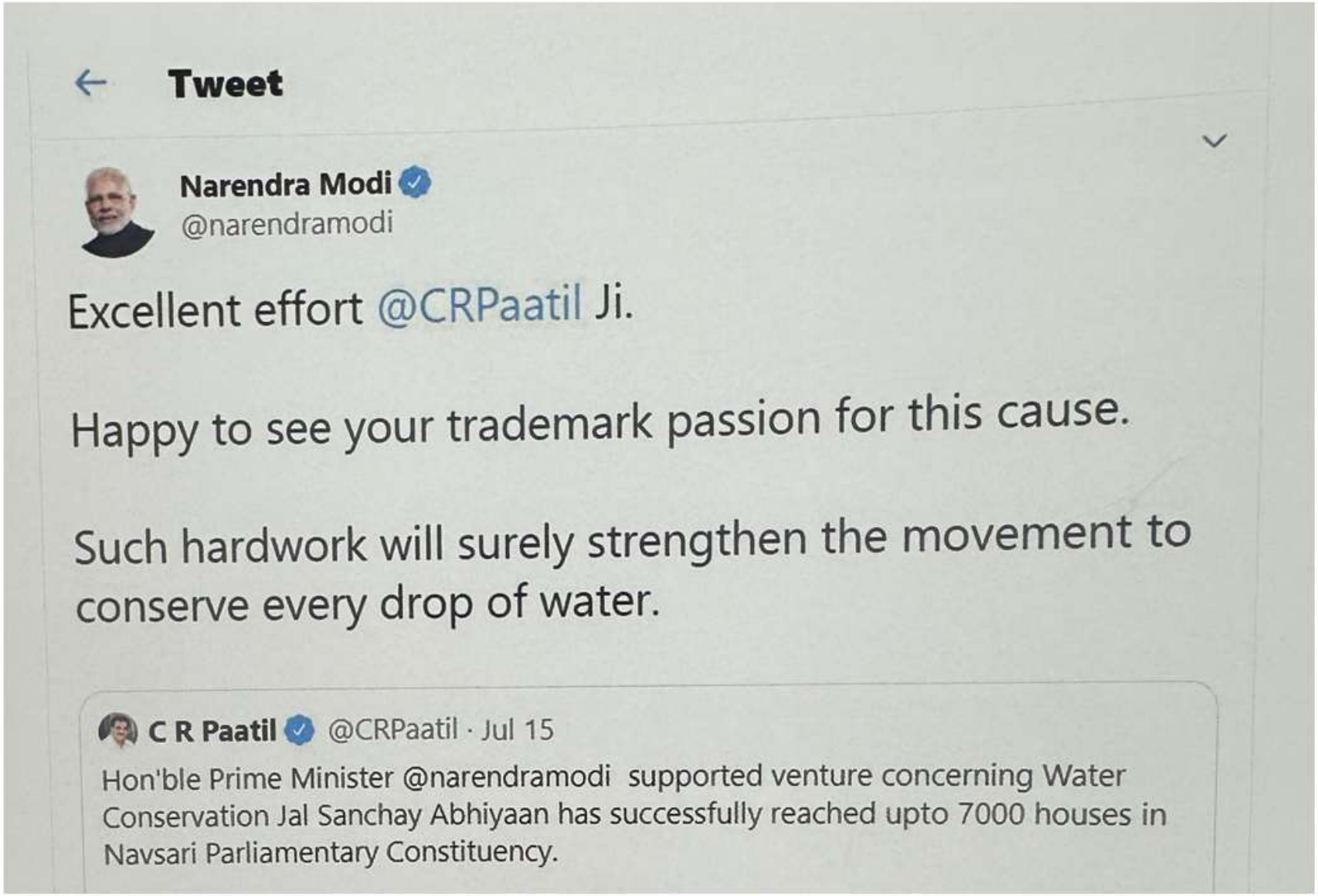
10) 150/200 mm slotted pipes with gravel packing additional can be added below can Barrel upto certain depth or water bearing strata to make system functioning more effective

# STEPS FOR CONSTRUCTION OF JAL SANCHAY SYSTEM





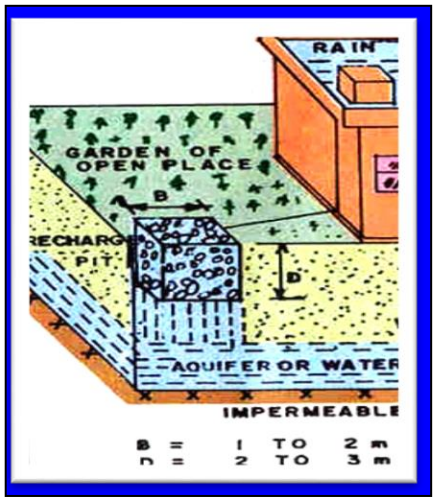

# Work Appreciation by Hon'ble PM



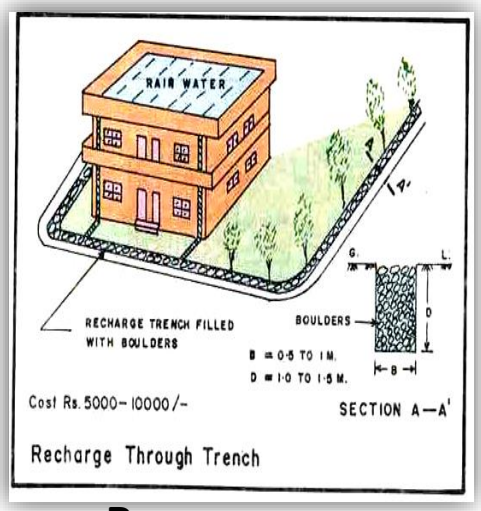
# SUCCESSFUL EXECUTION OF JAL SANCHAY SYSTEM AT VARIOUS HOUSES IN NAVSARI

## Annexure IV

## Photo Gallery

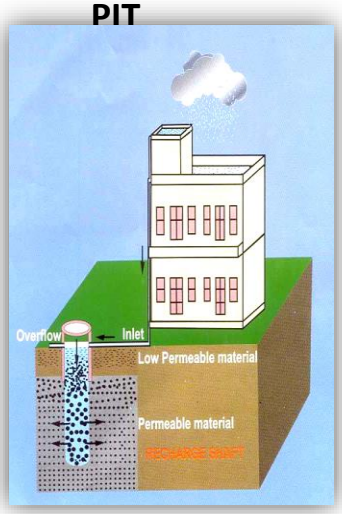



RECHARGE PIT

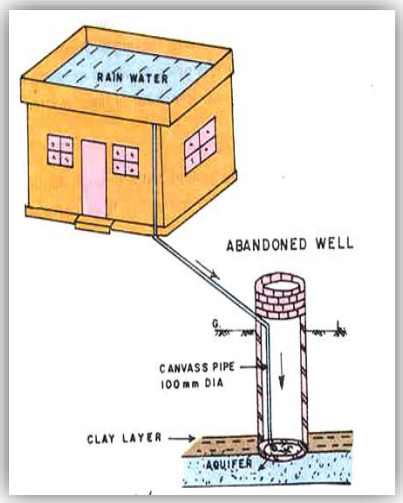



RECHARGE TRENCH

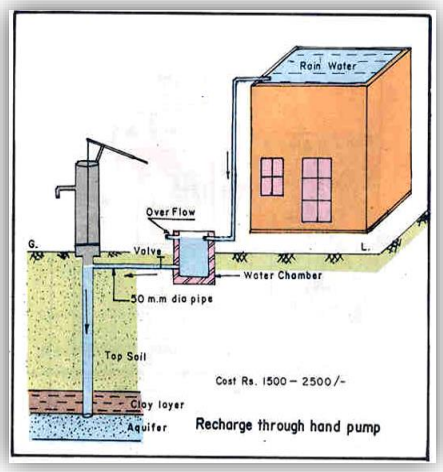

RECHARGE WELL




RECHARGE SHAFT




RECHARGE THROUGH




RECHARGE THROUGH ABANDONED BOREWELL

ED

**Nala Bund**


**Check Dam**


**Percolation Ponds with Recharge Wells**

**Gully Plug**