Academic Year 2022-23

6.5

Water in the Community

6.5.4 Sustainable Water Extraction on Campus

MRIIRS Weblink to SDG 6:

https://mriirs.edu.in/sdg06-clean-water-and-sanitation/

Sustainable Water Extraction on Campus:

MRIIRS for sustainability of water extraction has practiced Rooftop Rainwater Harvesting in the campus. MRIIRS follows all sustainable water-conscious building standards for water extraction. It has adopted green building norms. Toilets are constructed in such a manner that head loss remain minimum. All overflows are channelized back to sump well. Drinking water and raw water OHT are kept separate. MRIIRS has installed roof top rain water harvesting system in the campus. Also, water saving fixtures and sensors have been installed to taps and toilets.

As evidence in support to 6.5.4, **A. photo graphs/videos of fittings of tap and sensors** are available. **B. Roof top rain water harvesting system** (RTRWH) structure has been installed and the detailed have been appended as a consolidated report. The campus is situated in arid region, which stands in water scarcity zone. These practices help in recharging the ground water resource system. All the data are available in public domain through web site of MRIIRS. C. Off-Campus Contribution

A. Sensor based drinking water and toilet taps have been installed across the campus to minimize water usage under sustainable water extraction technologies:

- ✓ Geotagged Video of drinking water taps installed with sensors:

- ✓ Geotagged Video of washroom sink taps installed with sensors:

B. Report

on

Rain Water Harvesting System

At MRIIRS

Introduction:

India is suffering from a severe water crisis the likes of which the country has never seen and millions of lives and livelihoods are under threat. The need of the hour is sustainable, efficient and economic techniques which can tackle water scarcity. One such technology is rain water harvesting. Rainwater harvesting is the collection and storage of rainwater that runs off from the building tops, paved roads and other kinds of open spaces such as parks. The technology has proved itself on varied parameters and has emerged as one of the most important techniques a building can adopt in order to reduce its carbon footprint and enhance its eco friendliness. Manav Rachna being an institution which understands its responsibility of being eco-friendly has successfully installed and introduced the technology in its buildings. The report explains the rain water harvesting system of the institution in a detailed, elaborative, and lucid manner.

The rain water harvesting system was installed at MRIIRS with the following objectives:

- To increase recharge of groundwater by capturing and storing rainwater.
- To prevent water logging and thus the growth of disease producing bacteria.

Location of Rain Water Harvesting System installed at MRIIRS: C Block and T Block

Structural details of the rain water harvesting system:

Manav Rachna International Institute of Research and Studies have total area of 18.37 hectare. The potential annual run off of the campus is estimated as 0.048 million cubic meters (MCM). Taking 50% efficiency, the potential run off available for harvesting is 2.4 ham/yr. Thus, the harvesting of runoff water is planned in such a way that it is stored at the nearest possible site where it gets generated. The places of accumulation of run off leading to the water logging in certain areas are indicated in the campus. So, four rainwater harvesting systems have installed in Block A Parking, Block C, near Gate No. 7 of Block T and Block Q of the campus.

A-block Parking: The harvested rain water from roof top and paved area of A-Block is entered into the storage tank from where water is entered into six wells of 3-meter diameter and 6-meter depth**.** The details of this structure are summarised below:

RWH Detail	
Location No.	1
Location Name	A-Block
Installation year	2002
Catchment Area	10,543 m^2
Dimension	3 m dia 6 m deep

D-Block Rainwater harvesting System: The harvested rain water from roof top and paved area is collected in a chamber of 37500 litre capacity. Then the silt free water is passed through filter and brought to the tube well for recharge of ground water. The filter is of 1.5 m^3 volume, filled with boulder, gravel and coarse sand. The filtered water enters the well through slotted pipe. The recharge well is 60 meter deep and is telescopic in structure with 8 inches diameter of 18-meter length and 6 inches diameter of 27-meter length then 6 inches diameter of 12-meter length slotted pipe ended with 3-meter bail plug. The well has been constructed using rotary rig and gravel all through 6 inches diameter tube. Roof water and water from paved area is collected through storm water drain. The floor of the storm water rain is designed to trap silt in it. The details of this structure are summarised in the next table.

RWH Detail	
Location No.	2
Location Name	C-Block
Installation year	2017
Catchment Area	58,710 m^2
Dimension	0.203 m dia, 60 m deep

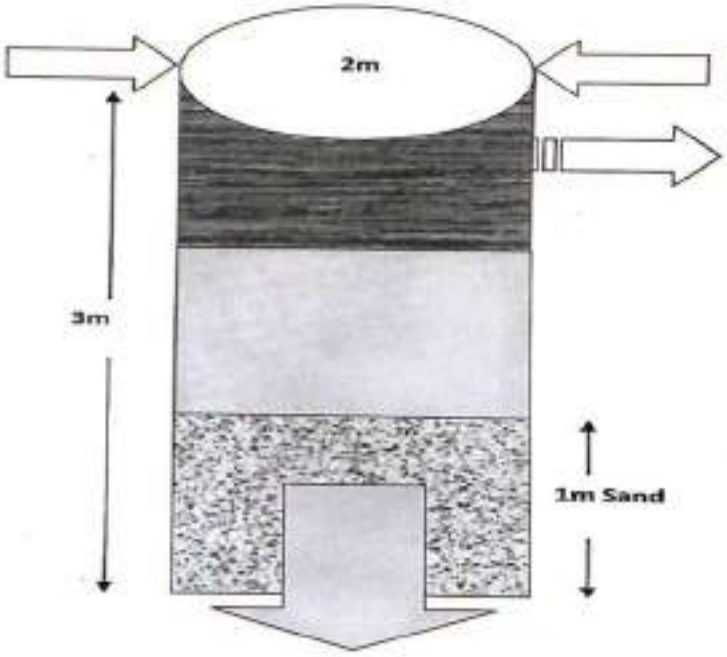
Gate No. 7 of T-Block Ground Water Recharge: The harvested rain water from roof top and paved area is made to enter into the recharge shaft of 2-meter diameter and 3-meter depth. The lower 1-meter part is filled with coarse sand to trap silt. The bottom of the shaft has been kept open against the aquifer for facilitating recharge. The over flow of the shaft has been connected with storm water drain. The details of this structure are summarised below:

RWH Detail	
Location No.	3
Location Name	T-Block
Installation year	2006
Catchment Area	57791 m^2
Dimension	2 m dia, 3 m deep

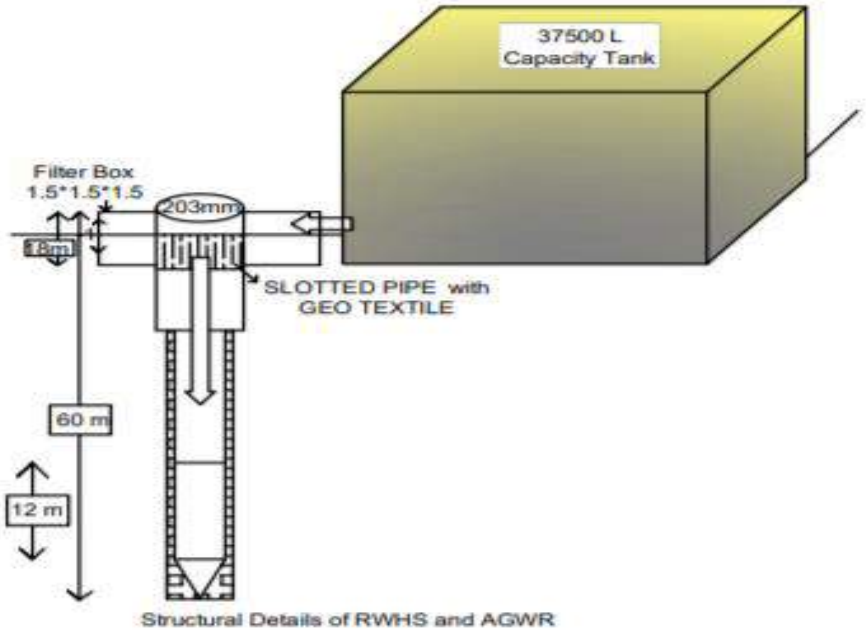
Q-Block Parking: The harvested rain water from roof top and paved area of Q-Block is entered into the storage tank from where water is made to enter into one well of 3-meter diameter and 6-meter depth**.** The details of this structure are summarised below:

RWH Detail	
Location No.	4
Location Name	Q-Block
Installation year	2006
Catchment Area	56656 m^2
Dimension	3 m dia 6 m deep

Schematic Diagram of Rainwater Harvesting System at MRIIRS



Gate No. 7 of T-Block Ground Water Recharge



C-Block Rainwater harvesting and artificial ground water recharge

Water harvesting Capacity of MRIIRS Campus

Total quantity of run off generated from the campus is **4.**8870 **ham/ year**. It is assumed that 50% of generated run off (i.e. **2.4 ham/ year**) will percolate down into ground water for recharging.

Details of land use and Runoff generation at MRIIRS Campus

Detail of land use and generation of runoff at MREI campus											
Land Use	Zone 1	Zone 2	Zone 3	Total Area	Av Annual Rain Fall	Runn off Coefficient	Zone1	Zone2	Zone 3	Total Runnoff (Z1+Z2+Z3)	
	Area						Area wise annual runnoff				
Unit	m^2	m^2	m^2	m^2	m		m3	m3	m3	m3/yr	ham/yr
Roof Top	13413	11822	8355	33590	0.697	0.85	7947	7004	4950	19900	1.99004
Paved	20430	18200	7810	46440	0.697	0.7	9968	8880	3810	22658	2.26581
Green Belt	10446	18769	17525	46740	0.697	0.15	1092	1962	1832	4887	0.48867
Open	2000	3500	7175	12675	0.697	0.15	209	366	750	1325	0.13252
Campus	69253	57791	56656	139445	0.697	-	19216	18212	11343	48770	4.8770

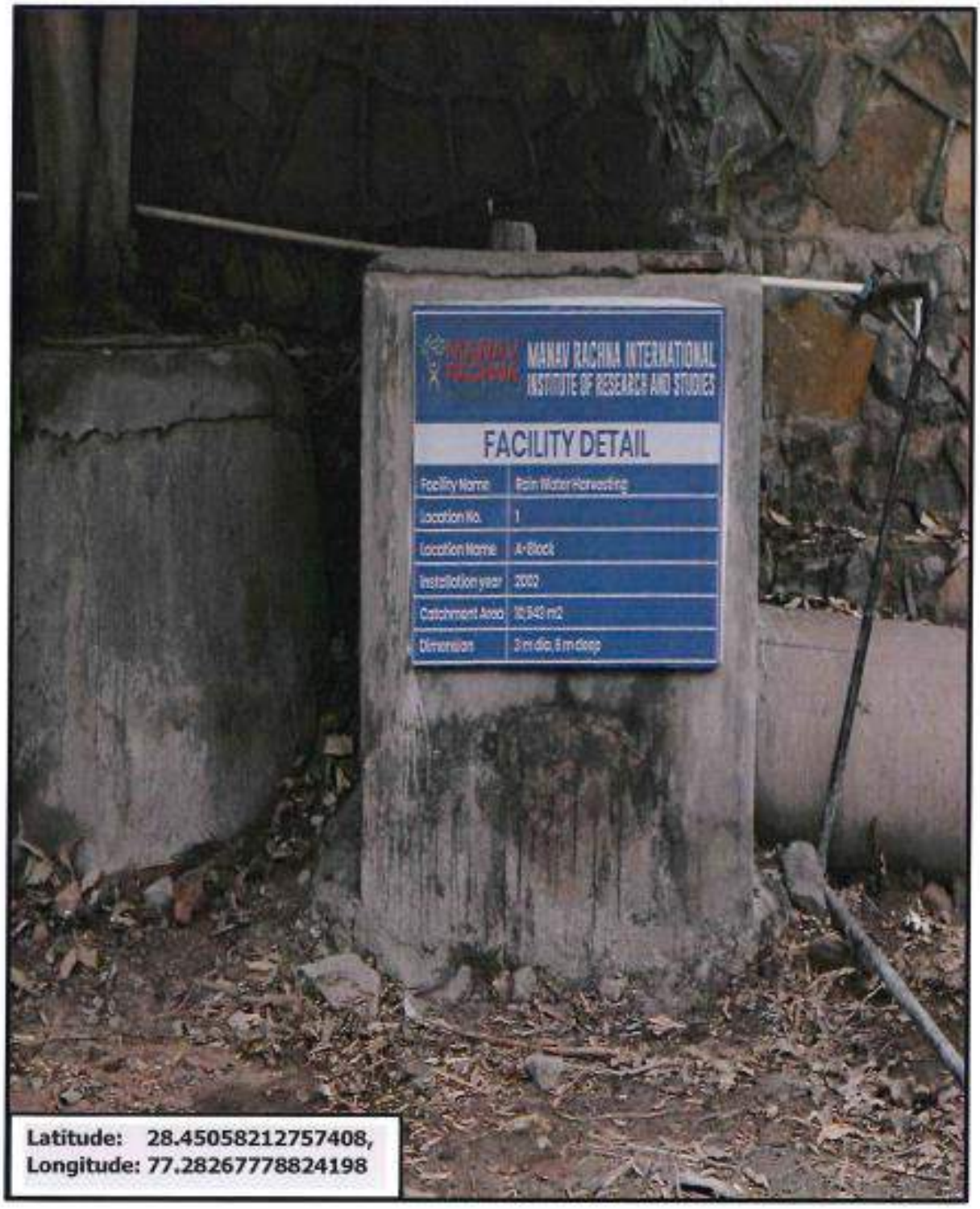
The geotagged pictures of rain water harvesting structures at various locations have been appended as **Annexure I.**

Annexure I

Geotagged Pictures
of
Rain Water Harvesting System
At MRIIRS

S. No	Relevant documents
1	Rain Water Harvesting Specifications - A Block
2	Rain Water Harvesting A Block
3	Rain Water Harvesting Specifications - C Block
4	Rain Water Harvesting Ground Water Recharge Well - C Block
5	Rain Water Harvesting Specifications - T Block near Gate No 7
6	Rain Water Harvesting Ground Water Recharge Shaft - T Block near Gate No 7
7	Rain Water Harvesting Q Block with specifications

SDG 6- CLEAN WATER AND SANITATION



Rain Water Harvesting Specifications A Block

Latitude: 28.45058212757408, Longitude: 77.28267778824198
28°27'02.1"N 77°16'57.6"E

Rain Water Harvesting A, Block

Latitude: 28.45043372846215, Longitude: 77.28271728071604
28°27'01.6"N 77°16'57.8"E

SDG 6- CLEAN WATER AND SANITATION

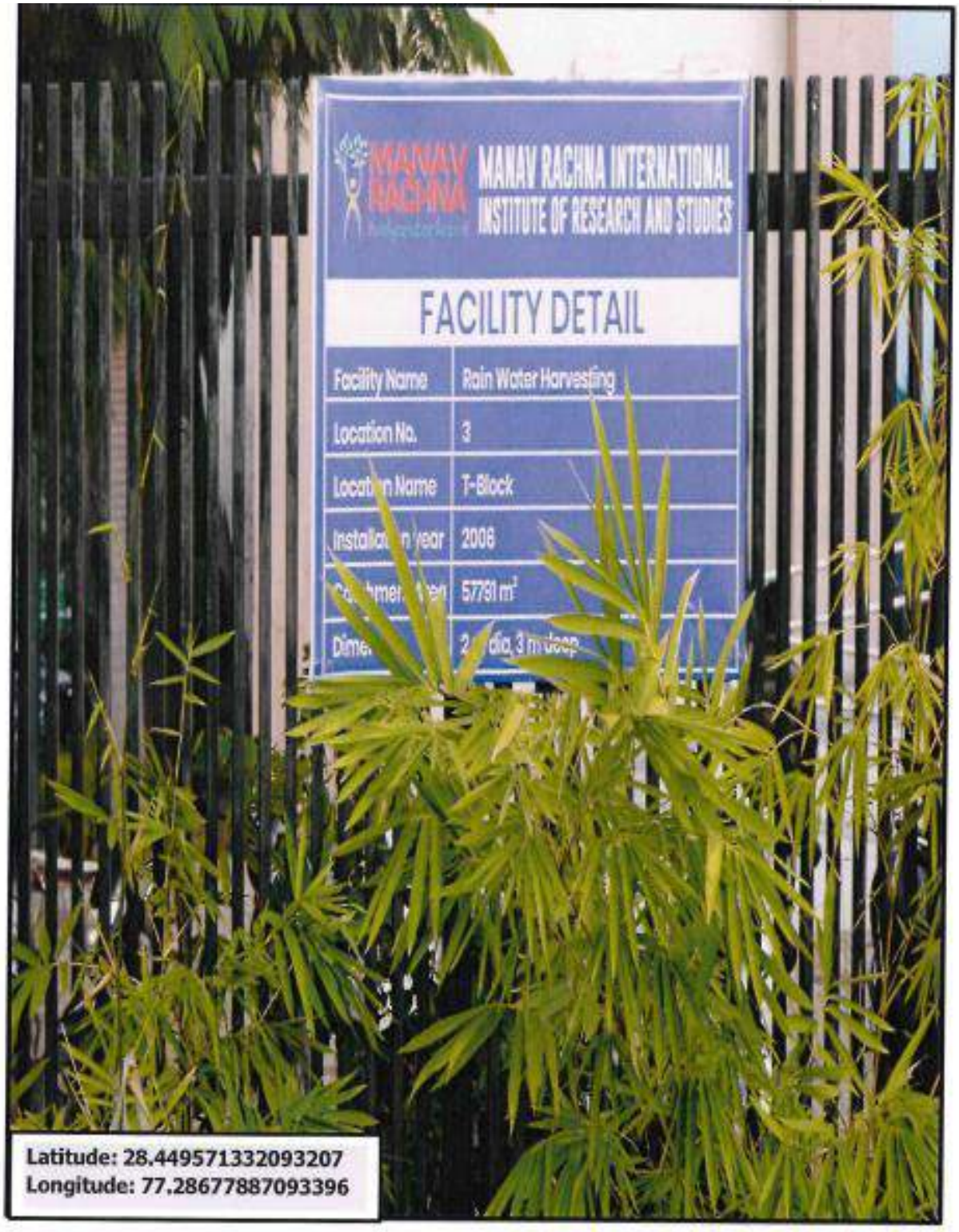
Rain Water Harvesting Specifications C Block

Latitude: 28.449646652682453, Longitude: 77.28266095157997
28°26'58.7"N 77°16'57.6"E

Rain Water Harvesting Ground Water Recharge Well C Block

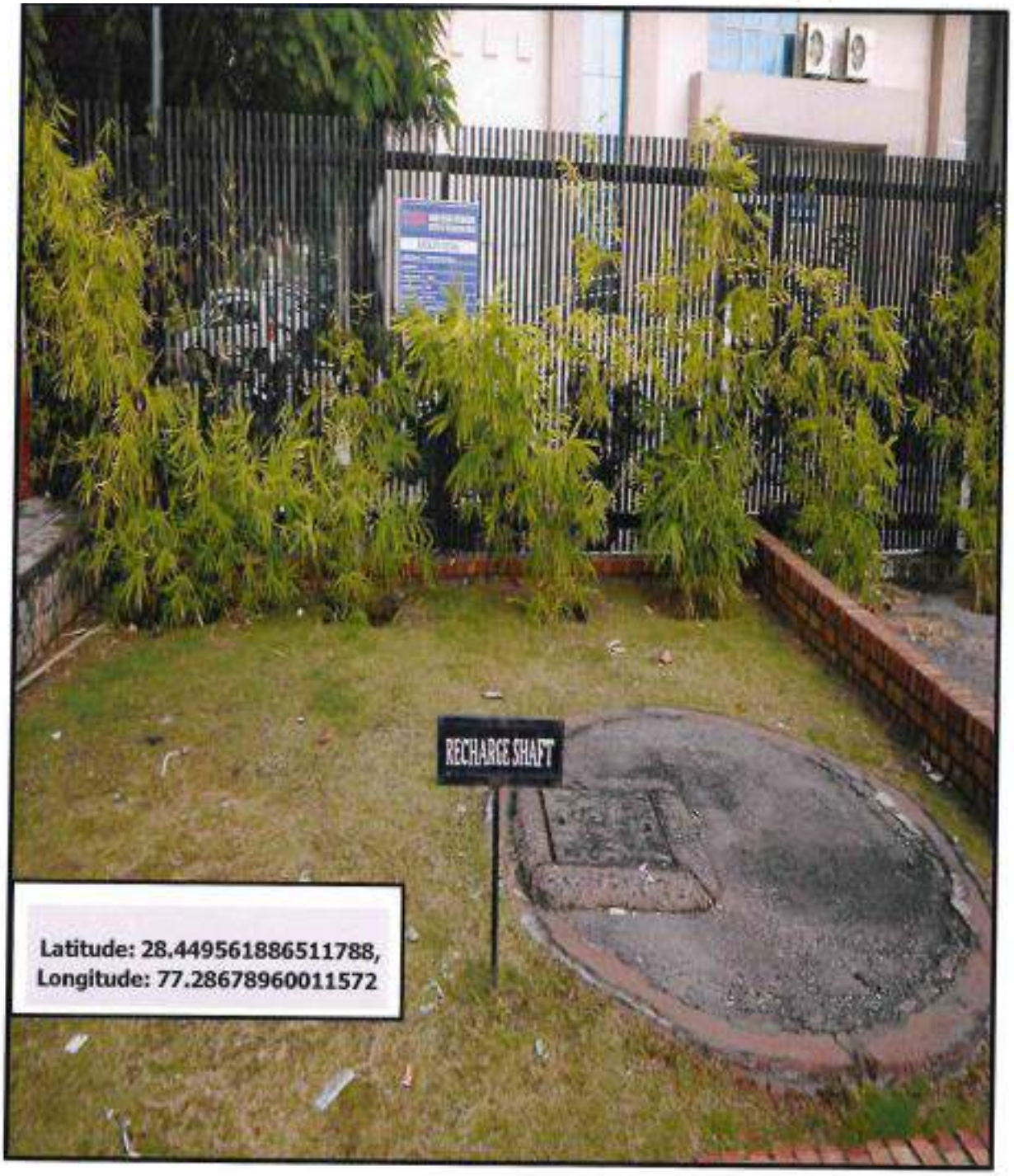
Latitude: 28.449680103517967, Longitude: 77.2826622628365
28°26'58.9"N 77°16'57.6"E

SDG 6- CLEAN WATER AND SANITATION



Rain Water Harvesting Specifications-T Block near Gate No 7

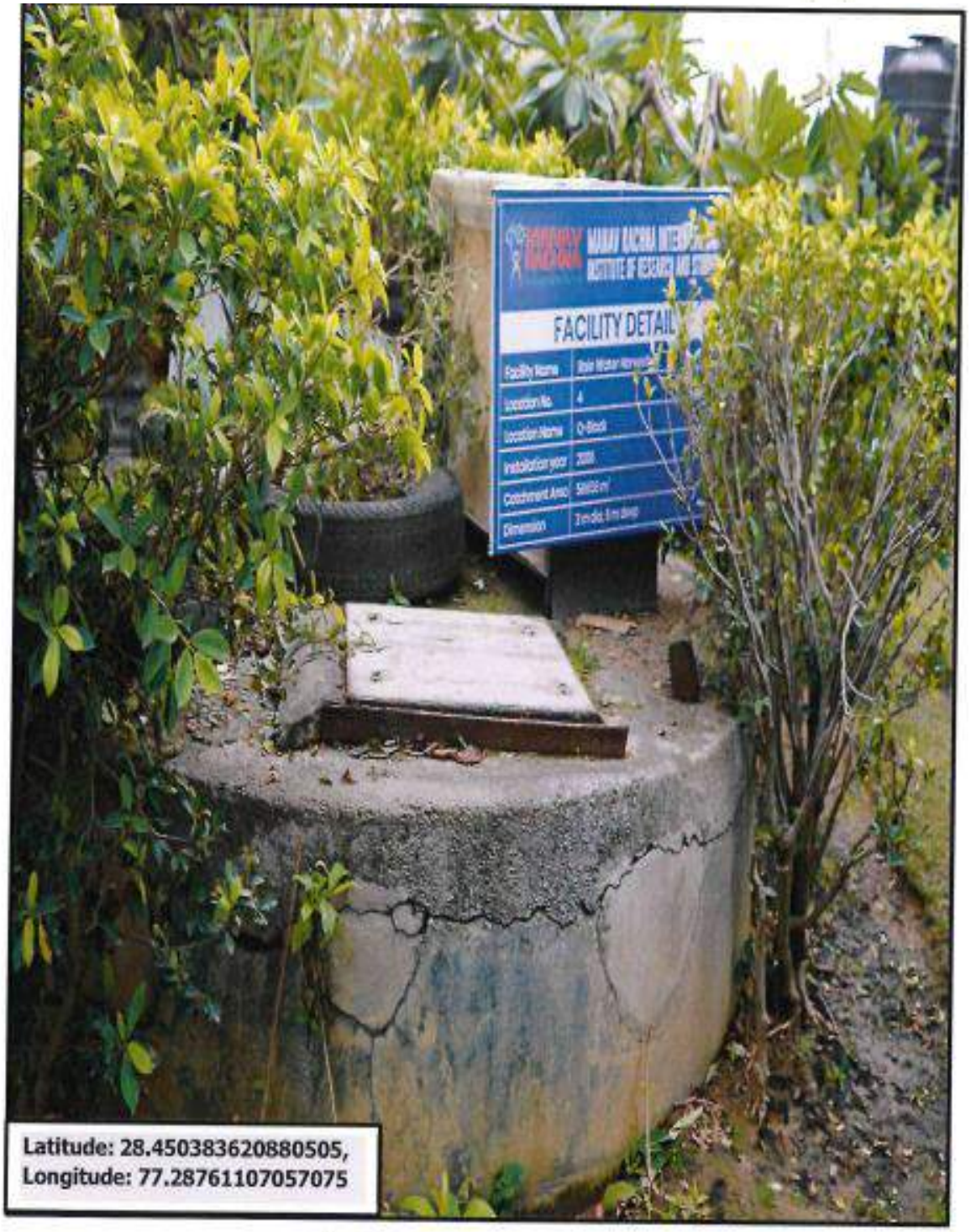
Latitude: 28.449571332093207, Longitude:77.28677887093396
28°26'58.5"N 77°17'12.4"E



Rain Water Harvesting Ground Water Recharge Shaft T Block

Latitude: 28.449561886511788, Longitude: 77.28678960011572
28°26'58.4"N 77°17'12.4"E

SDG 6- CLEAN WATER AND SANITATION



Rain Water Harvesting Q Block

Latitude: 28.450383620880505, Longitude: 77.28761107057075
28°27'01.4"N 77°17'15.4"E

Media Coverage on Talks delivered by Professors of Manav Rachna on Water Conservation:

विशेषज्ञ पानी बचाने का संदेश देंगे

तैयारी

- पांच दिवसीय कार्यशाला में आठ सदस्यीय टीम का गठन
- हर टीम आठ लोगों को ट्रेन्ड दे लोग दूसरों को ट्रेनिंग करेंगे

जाना को कंप्यूटर

रावल क्रिकेट

एमडीयू का परीक्षा परिणाम

Dainik Jagran 21 May 2019

कार्यशाला में जल संरक्षण पर हुई चर्चा

जासं, फरीदाबाद: मानव रचना इंटरनेशनल यूनिवर्सिटी में आयोजित पांच दिवसीय इको कंसल्ट मीट में पानी संरक्षण, रेन वाटर हार्वेस्टिंग के बारे में जानकारी दी गई। सेंटर फॉर एडवांस वाटर टेक्नोलॉजी एंड मैनेजमेंट की ओर से आयोजित इस मीट का उद्घाटन सीएडब्ल्यूटीएम के अध्यक्ष डॉ. डीके चड्ढा, मानव रचना के डीजी डॉ. एनसी वाधवा, एमआरआइआइआरएस के प्रो-वीसी डॉ. एमके सोनी ने संयुक्त रूप से किया। इस दौरान डॉ.डीके चड्ढा व प्रोफेसर डॉ.अरुणांशु मुखर्जी ने सभी अनुसंधानकर्ताओं से आग्रह किया कि वह पानी के महत्व और रेन वाटर हार्वेस्टिंग की आवश्यकता के बारे में लोगों में जागरुकता फैलाएं। डॉ.एनसी वाधवा ने पानी के संरक्षण की आवश्यकता पर जोर दिया, ताकि आने वाली पीढ़ियों को स्वच्छ पेयजल उपलब्ध हो सके। इस कार्यक्रम में अलग-अलग संस्थाओं के लोगों ने हिस्सा लिया, जिनमें एनजीओ, डॉक्टर्स, पीजी स्टूडेंट और रह अनुसंधानकर्ता शामिल थे।

यूनिवर्सिटी में आयोजित सेमीनार को संबोधित करते डॉ. अरुणांशु मुखर्जी • जागरण

भविष्य ने त
में जीता स

6.5
Water in the Community

6.5.4 Sustainable Water Extraction on Campus

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As evidence in support to 6.5.4, **A. photo graphs/videos of fittings of tap and sensors** are available. **B. Roof top rain water harvesting system** (RTRWH) structure has been installed and the detailed have been appended as a consolidated report. The campus is situated in arid region, which stands in water scarcity zone. These practices help in recharging the ground water resource system. All the data are available in public domain through web site of MRIIRS.

A. Sensor based drinking water and toilet taps have been installed across the campus to minimize water usage under sustainable water extraction technologies:

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on

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The rain water harvesting system was installed at MRIIRS with the following objectives:

- To increase recharge of groundwater by capturing and storing rainwater.
- To prevent water logging and thus the growth of disease producing bacteria.

Location of Rain Water Harvesting System installed at MRIIRS: C Block and T Block

Structural details of the rain water harvesting system:

Manav Rachna International Institute of Research and Studies have total area of 18.37 hectare. The potential annual run off of the campus is estimated as 0.048 million cubic meters (MCM). Taking 50% efficiency, the potential run off available for harvesting is 2.4 ham/yr. Thus, the harvesting of runoff water is planned in such a way that it is stored at the nearest possible site where it gets generated. The places of accumulation of run off leading to the water logging in certain areas are indicated in the campus. So, four rainwater harvesting systems have installed in Block A Parking, Block C, near Gate No. 7 of Block T and Block Q of the campus.

A-block Parking: The harvested rain water from roof top and paved area of A-Block is entered into the storage tank from where water is entered into six wells of 3-meter diameter and 6-meter depth**.** The details of this structure are summarised below:

RWH Detail	
Location No.	1
Location Name	A-Block
Installation year	2002
Catchment Area	10,543 m^2
Dimension	3 m dia 6 m deep

D-Block Rainwater harvesting System: The harvested rain water from roof top and paved area is collected in a chamber of 37500 litre capacity. Then the silt free water is passed through filter and brought to the tube well for recharge of ground water. The filter is of 1.5 m^3 volume, filled with boulder, gravel and coarse sand. The filtered water enters the well through slotted pipe. The recharge well is 60 meter deep and is telescopic in structure with 8 inches diameter of 18-meter length and 6 inches diameter of 27-meter length then 6 inches diameter of 12-meter length slotted pipe ended with 3-meter bail plug. The well has been constructed using rotary rig and gravel all through 6 inches diameter tube. Roof water and water from paved area is collected through storm water drain. The floor of the storm water rain is designed to trap silt in it. The details of this structure are summarised in the next table.

RWH Detail	
Location No.	2
Location Name	C-Block
Installation year	2017
Catchment Area	58,710 m^2
Dimension	0.203 m dia, 60 m deep

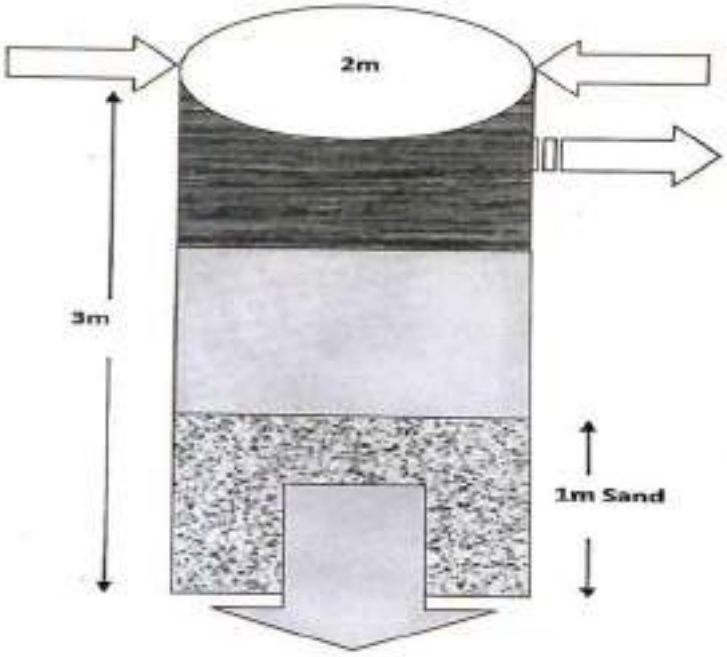
Gate No. 7 of T-Block Ground Water Recharge: The harvested rain water from roof top and paved area is made to enter into the recharge shaft of 2-meter diameter and 3-meter depth. The lower 1-meter part is filled with coarse sand to trap silt. The bottom of the shaft has been kept open against the aquifer for facilitating recharge. The over flow of the shaft has been connected with storm water drain. The details of this structure are summarised below:

RWH Detail	
Location No.	3
Location Name	T-Block
Installation year	2006
Catchment Area	57791 m^2
Dimension	2 m dia, 3 m deep

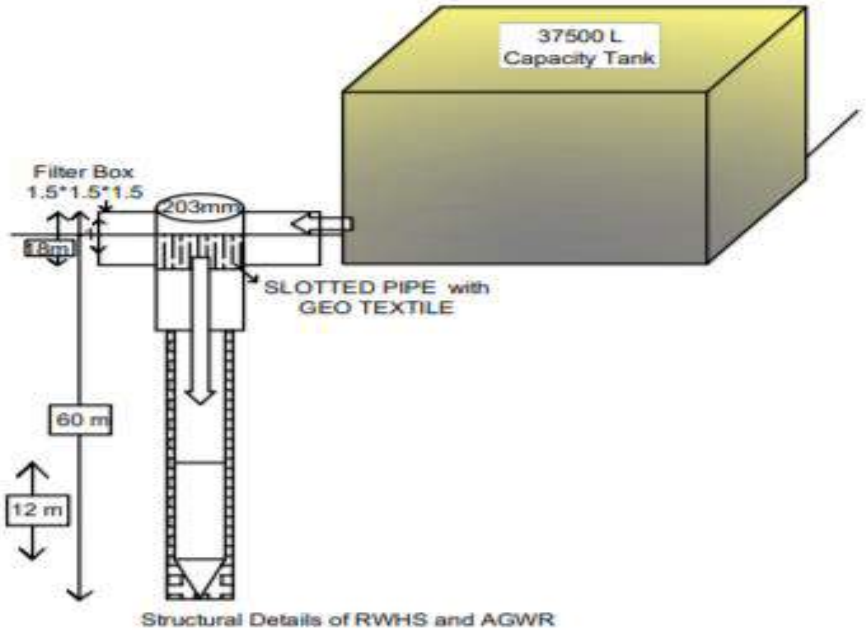
Q-Block Parking: The harvested rain water from roof top and paved area of Q-Block is entered into the storage tank from where water is made to enter into one well of 3-meter diameter and 6-meter depth**.** The details of this structure are summarised below:

RWH Detail	
Location No.	4
Location Name	Q-Block
Installation year	2006
Catchment Area	56656 m^2
Dimension	3 m dia 6 m deep

Schematic Diagram of Rainwater Harvesting System at MRIIRS



Gate No. 7 of T-Block Ground Water Recharge



C-Block Rainwater harvesting and artificial ground water recharge

Water harvesting Capacity of MRIIRS Campus

Total quantity of run off generated from the campus is **4.**8870 **ham/ year**. It is assumed that 50% of generated run off (i.e. **2.4 ham/ year**) will percolate down into ground water for recharging.

Details of land use and Runoff generation at MRIIRS Campus

Detail of land use and generation of runoff at MREI campus											
Land Use	Zone 1	Zone 2	Zone 3	Total Area	Av Annual Rain Fall	Runn off Coefficient	Zone1	Zone2	Zone 3	Total Runnoff (Z1+Z2+Z3)	
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Unit	m^2	m^2	m^2	m^2	m		m3	m3	m3	m3/yr	ham/yr
Roof Top	13413	11822	8355	33590	0.697	0.85	7947	7004	4950	19900	1.99004
Paved	20430	18200	7810	46440	0.697	0.7	9968	8880	3810	22658	2.26581
Green Belt	10446	18769	17525	46740	0.697	0.15	1092	1962	1832	4887	0.48867
Open	2000	3500	7175	12675	0.697	0.15	209	366	750	1325	0.13252
Campus	69253	57791	56656	139445	0.697	-	19216	18212	11343	48770	4.8770

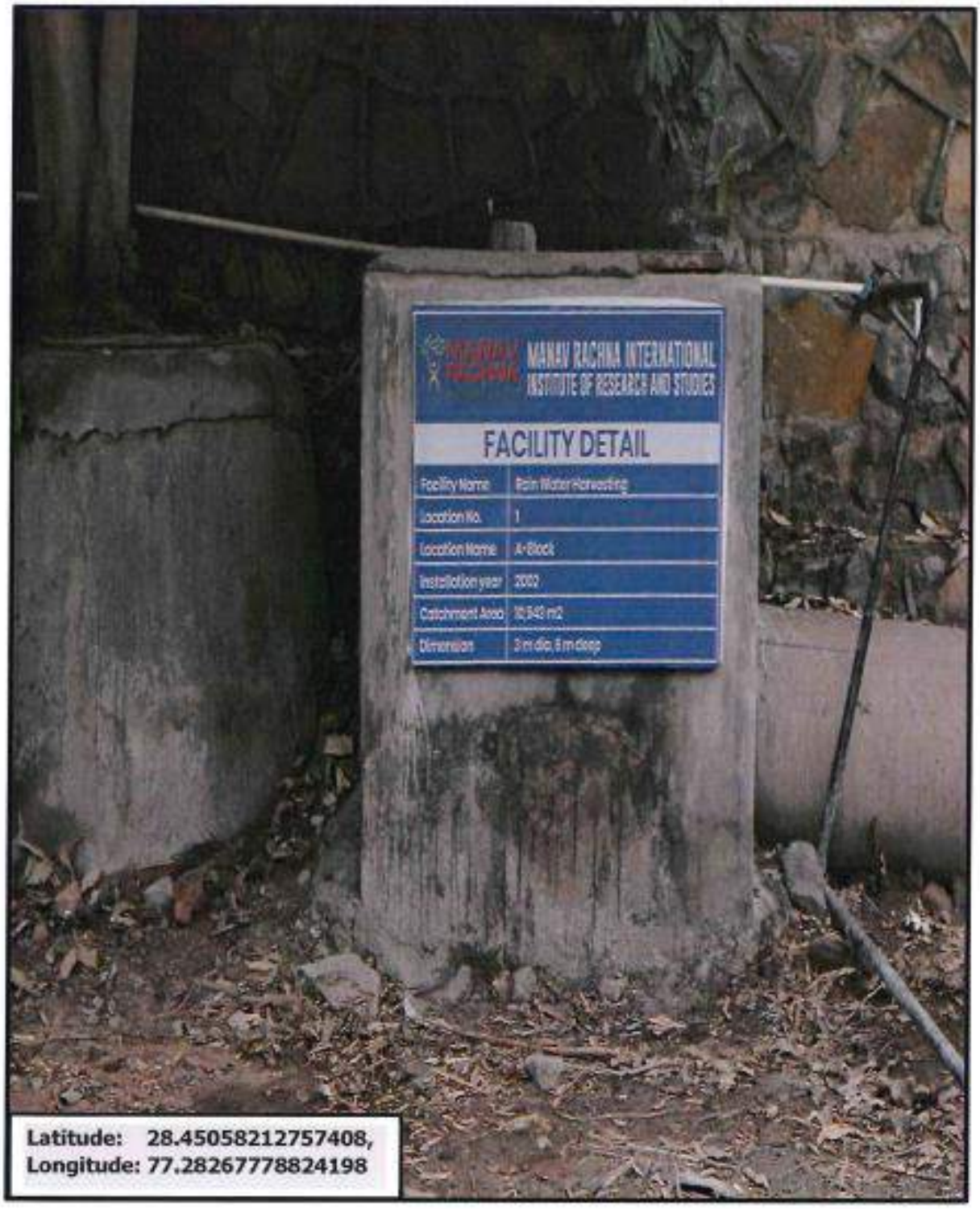
The geotagged pictures of rain water harvesting structures at various locations have been appended as **Annexure I.**

Annexure I

Geotagged Pictures
of
Rain Water Harvesting System
At MRIIRS

S. No	Relevant documents
1	Rain Water Harvesting Specifications - A Block
2	Rain Water Harvesting A Block
3	Rain Water Harvesting Specifications - C Block
4	Rain Water Harvesting Ground Water Recharge Well - C Block
5	Rain Water Harvesting Specifications - T Block near Gate No 7
6	Rain Water Harvesting Ground Water Recharge Shaft - T Block near Gate No 7
7	Rain Water Harvesting Q Block with specifications

SDG 6- CLEAN WATER AND SANITATION



Rain Water Harvesting Specifications A Block

Latitude: 28.45058212757408, Longitude: 77.28267778824198
28°27'02.1"N 77°16'57.6"E

Rain Water Harvesting A, Block

Latitude: 28.45043372846215, Longitude: 77.28271728071604
28°27'01.6"N 77°16'57.8"E

SDG 6- CLEAN WATER AND SANITATION

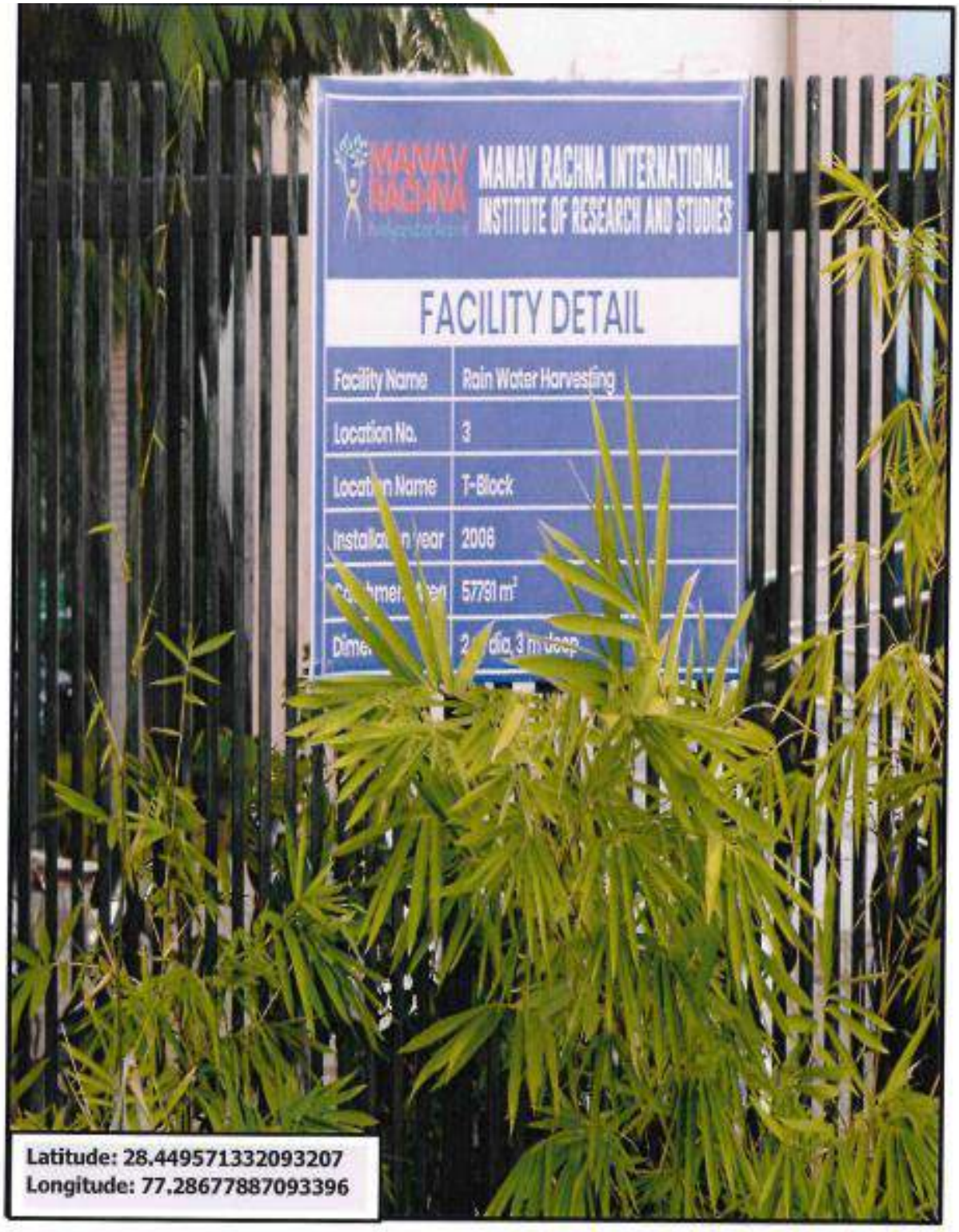
Rain Water Harvesting Specifications C Block

Latitude: 28.449646652682453, Longitude: 77.28266095157997
28°26'58.7"N 77°16'57.6"E

Rain Water Harvesting Ground Water Recharge Well C Block

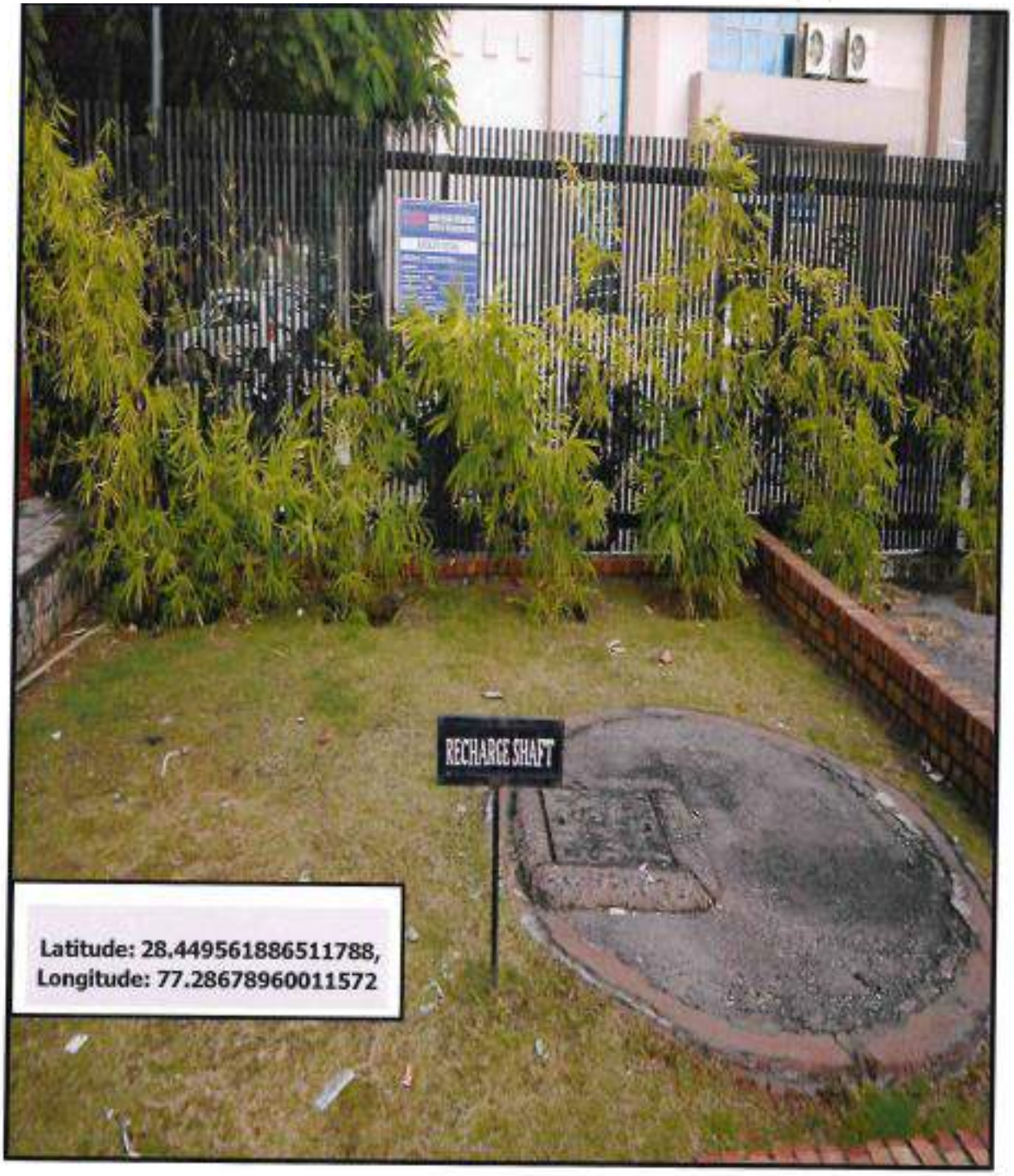
Latitude: 28.449680103517967, Longitude: 77.2826622628365
28°26'58.9"N 77°16'57.6"E

SDG 6- CLEAN WATER AND SANITATION



Rain Water Harvesting Specifications-T Block near Gate No 7

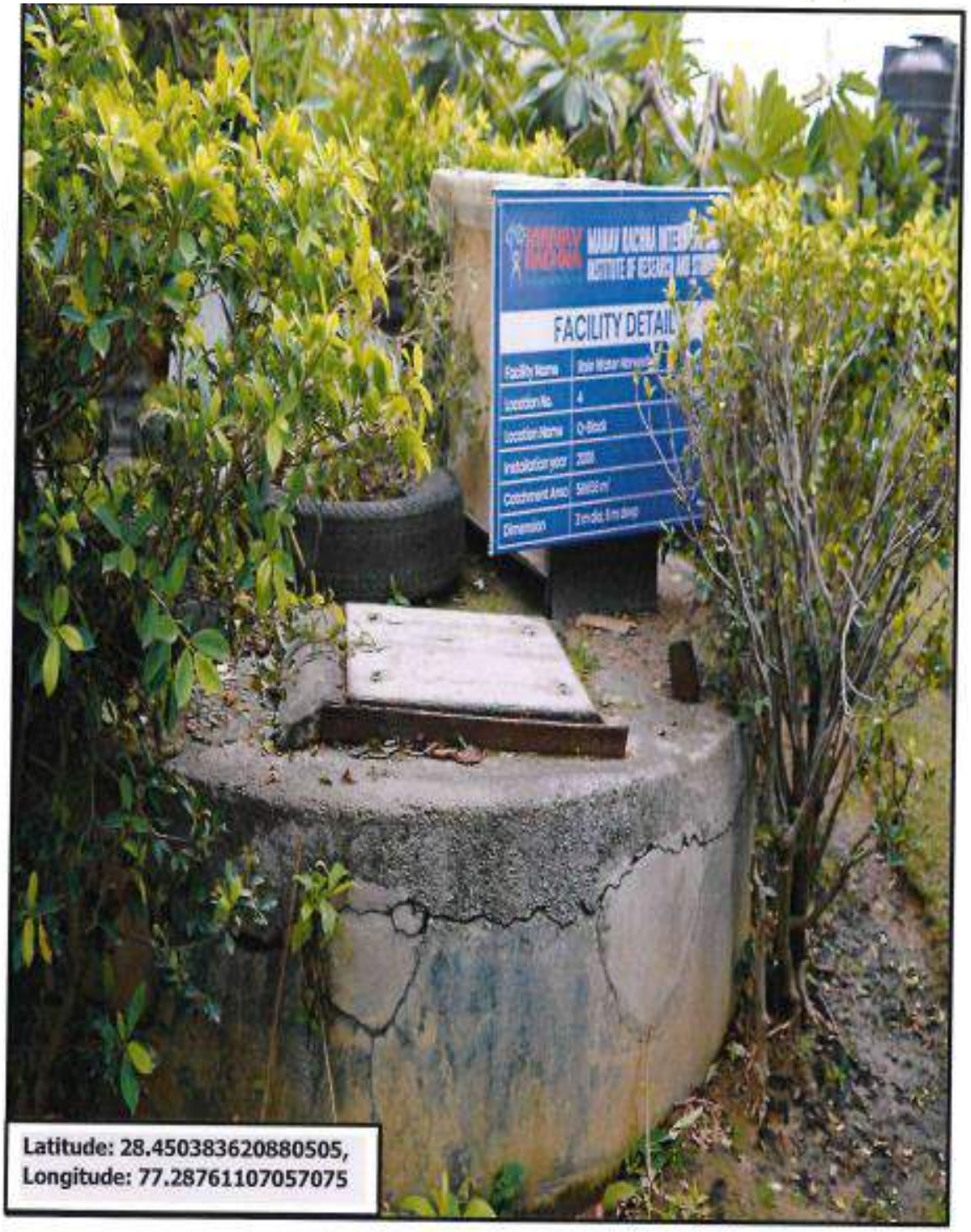
Latitude: 28.449571332093207, Longitude:77.28677887093396
28°26'58.5"N 77°17'12.4"E



Rain Water Harvesting Ground Water Recharge Shaft T Block

Latitude: 28.449561886511788, Longitude: 77.28678960011572
28°26'58.4"N 77°17'12.4"E

SDG 6- CLEAN WATER AND SANITATION



Rain Water Harvesting Q Block

Latitude: 28.450383620880505, Longitude: 77.28761107057075
28°27'01.4"N 77°17'15.4"E

Media Coverage on Talks delivered by Professors of Manav Rachna on Water Conservation:

विशेषज्ञ पानी बचाने का संदेश देंगे

तैयारी

- पांच दिवसीय कार्यशाला में आठ सदस्यीय टीम का गठन
- हर टीम आठ लोगों को ट्रेन्ड दे लोग दूसरों को ट्रेनिंग करेंगे

जाना को कंप्यूटर

रावल क्रिकेट

एमडीयू का परीक्षा परिणाम

Dainik Jagran 21 May 2019

कार्यशाला में जल संरक्षण पर हुई चर्चा

जासं, फरीदाबाद: मानव रचना इंटरनेशनल यूनिवर्सिटी में आयोजित पांच दिवसीय इको कंसल्ट मीट में पानी संरक्षण, रेन वाटर हार्वेस्टिंग के बारे में जानकारी दी गई। सेंटर फॉर एडवांस वाटर टेक्नोलॉजी एंड मैनेजमेंट की ओर से आयोजित इस मीट का उद्घाटन सीएडब्ल्यूटीएम के अध्यक्ष डॉ. डीके चड्ढा, मानव रचना के डीजी डॉ. एनसी वाधवा, एमआरआइआइआरएस के प्रो-वीसी डॉ. एमके सोनी ने संयुक्त रूप से किया। इस दौरान डॉ.डीके चड्ढा व प्रोफेसर डॉ.अरुणांशु मुखर्जी ने सभी अनुसंधानकर्ताओं से आग्रह किया कि वह पानी के महत्व और रेन वाटर हार्वेस्टिंग की आवश्यकता के बारे में लोगों में जागरुकता फैलाएं। डॉ.एनसी वाधवा ने पानी के संरक्षण की आवश्यकता पर जोर दिया, ताकि आने वाली पीढ़ियों को स्वच्छ पेयजल उपलब्ध हो सके। इस कार्यक्रम में अलग-अलग संस्थाओं के लोगों ने हिस्सा लिया, जिनमें एनजीओ, डॉक्टर्स, पीजी स्टूडेंट और रह अनुसंधानकर्ता शामिल थे।

यूनिवर्सिटी में आयोजित सेमीनार को संबोधित करते डॉ. अरुणांशु मुखर्जी • जागरण

भविष्य ने त
में जीता स

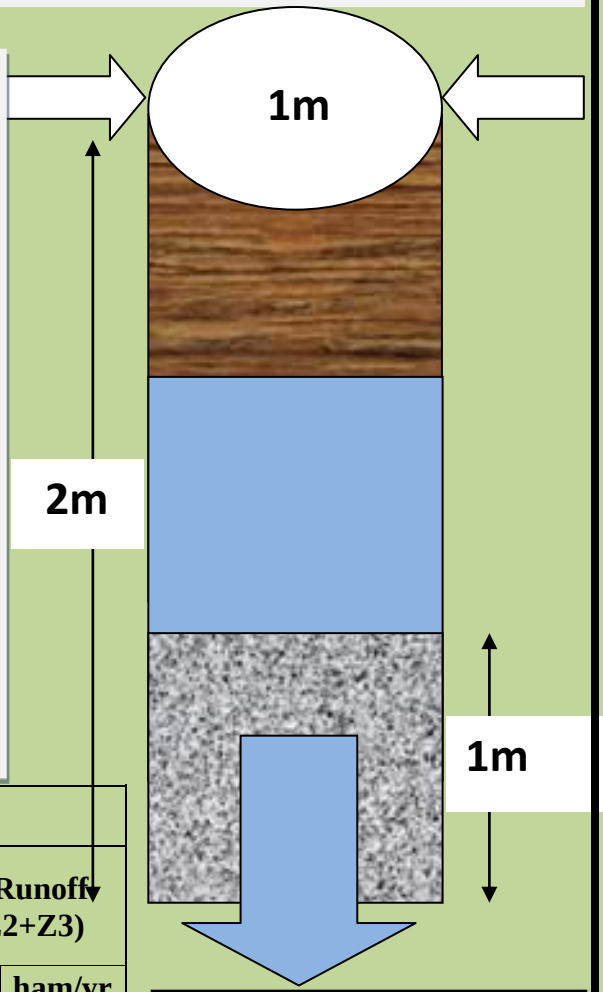
Rain Water Harvesting & Artificial Recharge of Groundwater in Campus of MREI

MANAV RACHNA
vidyanatariksha

The Manav Rachna Educational Institute campus is having an area of 18.37ha. The potential annual run off of the Campus is estimated as 0.048MCM. The harvesting of runoff water is planned in such a way that water should be stored at the nearest possible site where it generates. The zone wise runoff generation that may be considered for harvesting of the runoff. Two RWH &AR structures were constructed in the campus taking the advantage of morphology of the campus. These structures are described here.

1. Structural Details of Recharge shaft

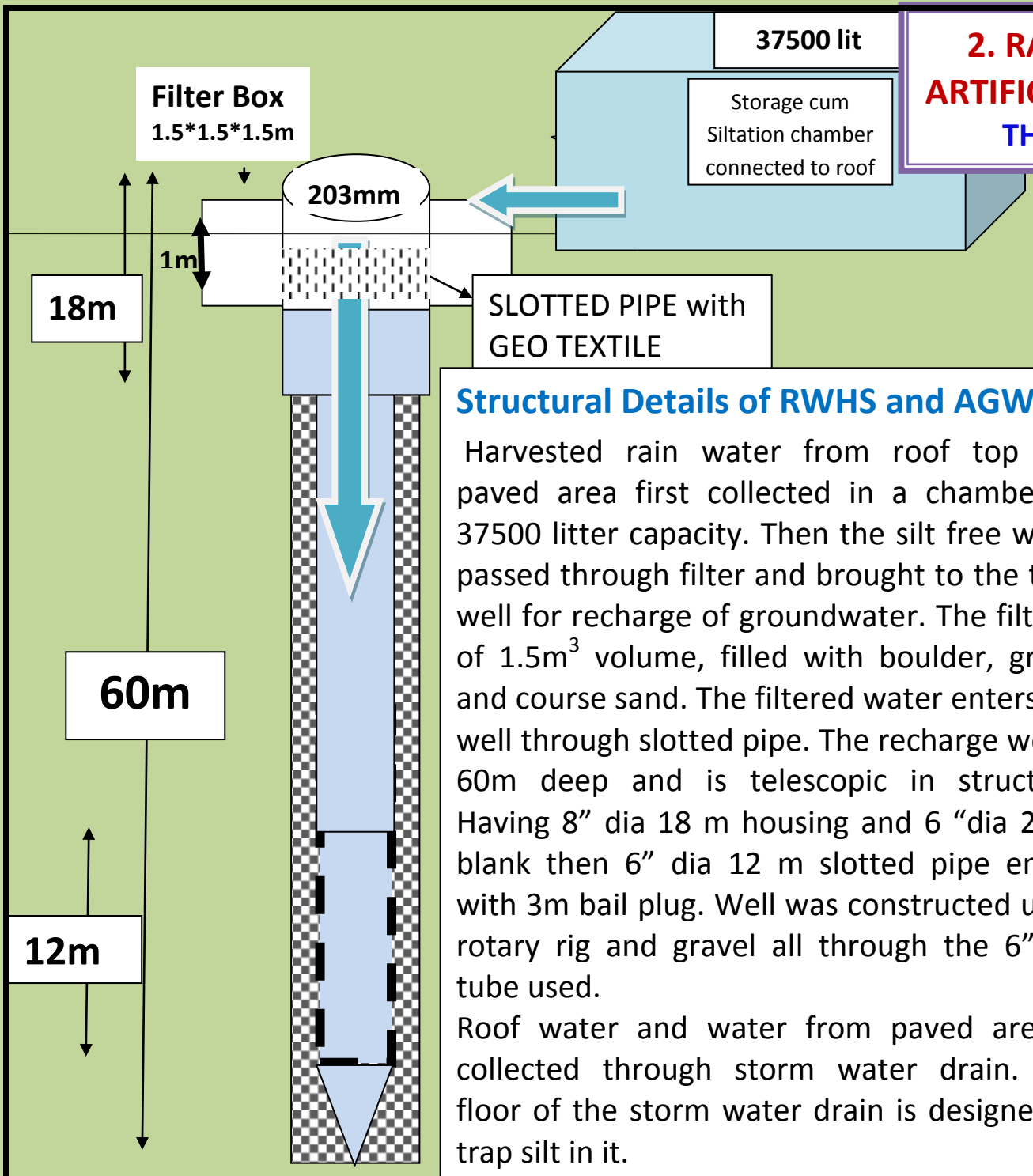
Harvested rain water of roof top and paved area is diverted to a recharge shaft of 1 m dia and 2m depth. The lower 1m part is filled with course sand to trap silt. The bottom of the shaft kept open against the aquifer for facilitating recharge. The over flow of the shaft is connected with storm water drain. Annual maintenance is carried out.



Details of land use and generation of runoff at MREI campus

Land Use	Zone 1	Zone 2	Zone 3	Total Area	Av annual Rainfall	Runoff Coefficient	Zone 1	Zone 2	Zone 3	Total Runoff (Z1+Z2+Z3)	
	Area						Area wise annual runoff				
Unit	m^2	m^2	m^2	m^2	m		m^3	m^3	m^3	m^3/yr	ham/yr
Roof Top	13413	11822	8355	33590	0.697	0.85	7947	7004	4950	19900	1.99004
Paved	20430	18200	7810	46440	0.697	0.7	9968	8880	3810	22658	2.26581
Green belt	10446	18769	17525	46740	0.697	0.15	1092	1962	1832	4887	0.48867
Open	2000	3500	7175	12675	0.697	0.15	209	366	750	1325	0.13252
Campus	69253	57791	56656	139445	0.697	-	19216	18212	11343	48770	4.8770

2. RAIN WATER HARVESTING AND ARTIFICIAL GROUNDWATER RECHARGE THROUGH ABANDON TUBE WELL



Structural Details of RWHS and AGWR

Harvested rain water from roof top and paved area first collected in a chamber of 37500 litter capacity. Then the silt free water passed through filter and brought to the tube well for recharge of groundwater. The filter is of 1.5m^3 volume, filled with boulder, gravel and course sand. The filtered water enters the well through slotted pipe. The recharge well is 60m deep and is telescopic in structure. Having 8" dia 18 m housing and 6 "dia 27 m blank then 6" dia 12 m slotted pipe ended with 3m bail plug. Well was constructed using rotary rig and gravel all through the 6" dia tube used.

Roof water and water from paved area is collected through storm water drain. The floor of the storm water drain is designed to trap silt in it.

C. Off Campus Contribution of MRCAWTM for Sustainable Water Extraction

MRCAWTM Annual Brochure for 2022-23 is provided as evidence-

- ✓ **Ongoing and completed funded Project work in the above mentioned area has been highlighted with yellow color or verification.**

Manav Rachna International Institute of Research and Studies

NAAC A++Grade, Deemed-to be- University

BROCHURE

Manav Rachna Centre for Advance Water Technology & Management (MRCAWTM)

July 2023

ABOUT THE CENTRE

Manav Rachna Centre for Advance Water Technology & Management (**MRCAWTM**) was established in 2017 to pursue teaching, research, consultancy and impart training programmes in hydrogeology, water resources engineering and management, water quality and collateral environment and ecology issues. The Centre forms a pool of professionals and researchers from the field of hydrology, hydrogeology, hydrochemistry, eco-hydrology and environment management. Besides, the Center has also developed a skill set on community centric water resource development, socio-hydrology and watershed based sustainable management. The Center aims to address real challenges faced by the stakeholders and also provides a platform for science and technology-based solutions through non-invasive investigation, water quality analysis, recycling of waste water, surface and ground water flow and resource analysis, satellite databased interpretation, local and regional scale hydro-statigraphic analysis, mathematical modeling of water resources and GIS based applications.

Aqua Excellence Awardee 2017

MRCAWTM is having five field units, one each at Barmer, Ballabhgarh, Khol-Rewari, Palwal and Panchkula where two to ten field specialists are working. MRCAWTM in its short period of journey, has been able to achieve significant milestones in the form of projects obtained, executed, and completed. So far 16 projects have been successfully completed between June 2018 and June 2023 of worth ~Rs2.63 Cr. Further, 07 more projects of Rs 12.34 Cr are in progress as on 1st July 2023. MRCAWTM is working for its vision of **clean water for all forever.** The major area of work is divided into 1. R&D Studies, 2. Technical Interventions, 3. Training and Capacity Building, 4. Outreach programs, 5. Product and Innovation. The Center has also established linkage with various Governmental, academic, and non-Governmental agencies through MoUs.

Vision: "Clean water for all forever" (सदा सबके लिए शुद्ध जल)

MRCAWTM has been able to **achieve Accreditation of CGWA, GOI** on 1st Oct 2021 for next 5 yrs. MRCAWTM has grabbed the **Aqua Foundation Excellence Award, 2017** under the category of Institutional Excellence in Resource Management. The faculties of Center have published high impact research papers in National and International Scientific Journals and written Books and Book chapters of reputed publishers.


Accreditation Board of CGWA

Certificate of Accreditation

MOUs OF CENTER

Active MOUs of MR Center for Advance Water Technology and Management, MRIIRS

SN	Name of Organization	Date of MOU	Activates Taken up under MOU	Valid for
1	Central Ground Water Board, MoJS, GOI	26.06.2020	Faculty exchange- CGWB Scientists were invited as External Examiners, MRIIRS Civil Engg. students visited CGWB Campus. MRCAWTM experts attended group discussion at CGWB, Joint Water Summit 2023 on 24th Feb23.	2 Years further Extended
2	Geovale Services Kolkata	18.08.2021	Geovale used our expertise on Backwerks for their project, MRCAWTM experts invited to attend one day workshop at Kolkata on 18th Jan23	4 Years
3	EMTRC New Delhi	21.09.2021	MRCAWTM expert assisted EMTRC in fly ash project.	3 Years
4	CAIRNS-Vedanta Oil & Gas Pvt Ltd Gurugram	11.06.2021	Joint monitoring of aquifers of Barmer area through half yearly hydrocensus of about 3000 water wells.	3 Years
5	IWRD, Govt of Haryana	11.06.2021	MRCAWTM is District Implementation Partner of IWRD in participatory ground water management in Gram Panchayat level in three districts of Haryana	4 Years
6	WCS Bhubaneswar	03.05.2022	MRCAWTM conducted 7 consultancy projects of Fe ore mines for WCS during last one year	5 Years
7	SGSD, Gurugram	01.07.2022	SGSD experts carried out civil construction of ASR systems established under MRCAWTM owned DST Project.	1 Year
8	Ministry of Jal Shakti, WR&RD	12.09.2023	Establishing a Program Support Unit for Namami Ganga Under National Water Mission	3 Years

MRCAWTM is accredited under CGWA to prepare reports in the functional areas of 1. Groundwater Impact Assessment 2. Hydrogeological reports of Mining Projects

ON GOING PROJECTS OF MRCAWTM

As on 01st July 2023

Sn.	Ongoing Projects of MRCAWTM, MRIIRS	Funding Agency	From Date & Period	Objective
1	Co-solving Water logging and Groundwater depletion issue in parts of Faridabad Smart City	WTI, DST, GOI	21 .05. 21 36 months	DST Project on solution to flash flood and groundwater (GW) depletion
2	Hydro Geological Survey for Aquifer Monitoring in Barmer Area, Rajasthan,	Cairn Oil & Gas Vedanta Ltd	02.07.21 36 months	Industrial project on impact study on GW use
3	Haryana Atal Bhujal Yojna-Cluster 06 (Faridabad-Rewari Districts)	IWRD Haryana	11.8.2021 48 months	Haryana Govt Project on improving sustainability of GW through participatory approach at Gram panchayat level in Haryana
4	Haryana Atal Bhujal Yojna-Cluster 07 (Palwal District)	IWRD Haryana	11.8.2021 48 months	
5	Haryana Jal Jeevan Mission – State Implementation Support Agency (SISA)	PHED Haryana	27.09.2021 24 months	Haryana Govt Project on assured household water supply in rural Haryana
6	Haryana Jal Jeevan Mission – Energy Audit State Implementation Support Agency	PHED Haryana	01.11.2022 12 months	Haryana Govt project on auditing energy consumption for GW abstraction
7	Groundwater condition study in core and buffer zone of proposed Iron ore mine around Villages, Eklama, District Kabirdham, CG	WCS Bhubaneswar	01.07.2023 04 months	Impact assessment of mining on GW for NOC under CGWA accreditation.

WAY FORWARD

Completed projects under MRCAWTM, as on 30th June 2023

No	Project Name and Status	Funding Agency	Date of Comp.	Objective
1	Technical guidance in construction of Rainwater Harvesting Structures in Faridabad City	M/s Navjoti Foundation, Gurugram	29.03.2023	Rainwater conservation
2	Impact assessment of mining of Iron ore on GW in and around Raikela Sundargarh Odisha.	M/s WCS Bhubaneshwar, Odissa	08.10.2022 04 months	Impact assessment of Mining on GW
3	Impact assessment of mining of Iron ore on GW in and around Dholta Pahar, Sundergarh, Odissa	M/s WCS Bhubaneshwar, Odissa	04.4.2022 08 months	Impact assessment of Mining on GW
4	Impact assessment of mining of Iron ore on GW in and around Netrabandh Pahar, Sundergarh,	M/s WCS Bhubaneshwar, Odissa	04.4.2022 04 months	Impact assessment of Mining on GW
5	Study for Rainwater harvesting around Iron ore mine of Dholta Pahar, Sundergarh, Odissa	M/s WCS Bhubaneshwar, Odissa	04.4.2022 04 months	Study for Rainwater harvesting in Mining area
6	Study for Rainwater harvesting around Iron ore mine of Netrabandh Pahar, Sundergarh, Odissa	M/s WCS Bhubaneshwar, Odissa	04.4.2022 04 months	Study for Rainwater harvesting in Mining area
7	Biodiversity study around Iron ore mine of Dholta Pahar, Sundergarh, Odissa	M/s WCS Bhubaneshwar, Odissa	04.4.2022 04 months	Study for Biodiversity in Mining area
8	Biodiversity study around Iron ore mine of Netrabandh Pahar Sundergarh, Odissa	M/s WCS Bhubaneshwar, Odissa	04.4.2022 04 months	Study for Biodiversity in Mining area
9	Impact assessment of underground mining of Manganese on GW in and around Miragpur, MP.	M/s D P Rai, Balaghat MP	April 2022 3 months	Impact assessment of Mining on GW
10	Impact assessment of underground mining of Manganese on GW in and around Pandarwani, MP.	M/s D P Rai, Balaghat MP	April 2022 3 months	Impact assessment of Mining on GW
11	Hydro Geological Survey for Aquifer Monitoring in Barmer Area, Rajasthan (2018-21).	Cairns O&G Vedanta Ltd	June 2021 36 months	Industrial project on impact study on GW use
12	Communicating Science through Model Water and Eco-Health Clinic for quality of life.	NCSTC, DST, GOI	May 2020 15 months	Water literacy through hands on experiments for students
13	USAID URBAN WASH Innovation Lab,	USAID-NIUA	Dec 2019 30 months	Awareness on water and sanitation
14	Detailed investigations in Khoh Village for Rainwater Harvesting,	MSF, Gurgaon	April, 2019 3months	Sustainable solutions of groundwater use
15	ISP system for treating saline Groundwater-Techno-Commercial, **abandoned** due to Change in policy of State of Haryana on saline water use	Maharani Innovative Paints Pvt Ltd. Prithla	Sept 2020 12 months	Use of saline water through eco-friendly technology
16	Reconnaissance survey for Water prospect in 10 adopted villages of Maruti-Suzuki Foundation	MSF, Gurgaon	Dec 2018	Sustainable solutions of groundwater use

DST FUNDED PROJECT-FARIDABAD

Co- solving Water Logging and Ground Water Depletion Issue in parts of Faridabad Smart City using Underground Taming of Flood Water for Aquifer Storage and Recovery:

WTC-DST GOI Supported Project No-DST/TMD/EWO/WTT/2K19/EWFH/237(G)&(C)

PI: Dr Arunangshu Mukherjee, Director, MRCAWTM and Co-PI: Dr Nidhi Didwania, BT, MRIIRS

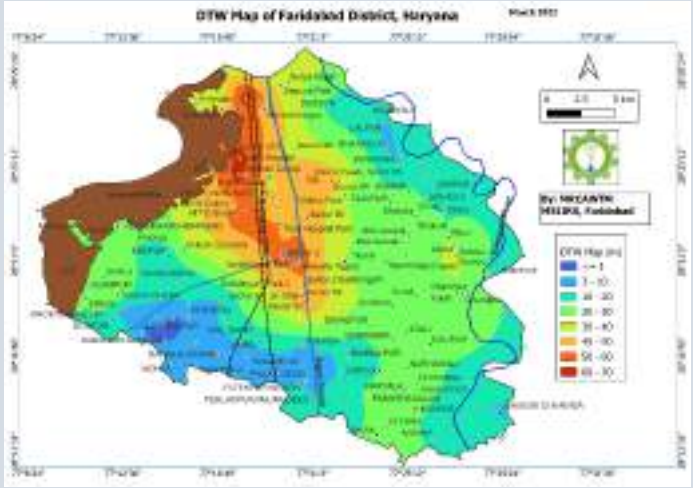
Steps followed for site selection and construction of ASRS at FSC area

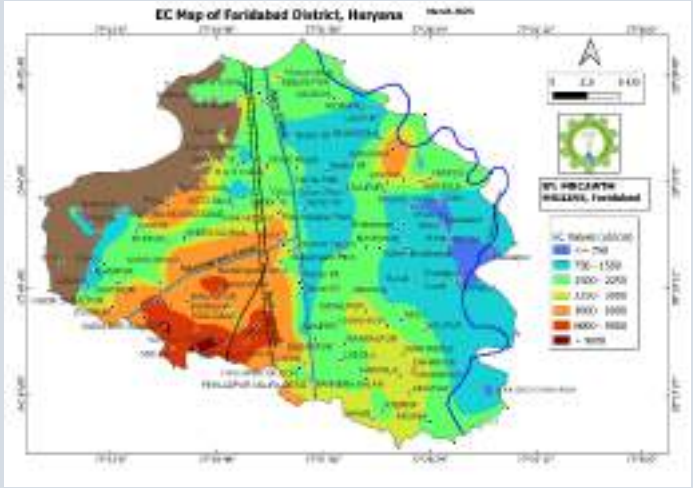
Site selection

1. Joint inspection for finalization of possible locations for construction of ASRS
2. Detailed field investigations on hydrogeology for identification of sites on agreed locations for construction of ASRS
3. Identification and hiring of agencies for Surface geophysical and DGPS study
4. Surface geophysical study and DGPS survey to pin point the site within identified locations.
5. Hydraulic investigations on identified and pinpointed site for catchment delineation
6. Finalization of site for construction of ASRS

Construction of ASRS at FSC area

7. Based on results of detailed hydraulic studies calculated the runoff generation and silt load and dimension of de-siltation, coagulation and filtration chambers for each site.
8. Preparation of working drawing and BOQ for tendering
9. Construction of ASRS involving various steps
    a. Selection of Rig as per the geology of the area for drilling
    b. Drilling of pilot hole on pinpointed site to decipher the aquifer geometry and nature-character of aquifer at selected site and preparation of litho-log
    c. Borehole logging to finalize the well assembly in accordance to the litho-log
    d. Lowing of assembly and construction of gravel pack tube well
    e. Slug test to determine the intake capacity of constructed tube well
    f. Mechanical digging of pits for construction of de-siltation, coagulation and filtration chamber.
    g. Construction of de-siltation, coagulation and filtration chambers as per calculated dimensions given in the working drawing.
    h. Filling of filter material in the filtration chamber constructed around tube well
    i. Roof casting of ASRS
    j. Hanging of Ferric chlorite dope through specially provided hanger in the coagulation chamber
10. Installation of Automatic water level recorder with telemetry at ASRS site
11. Testing of functioning of ASRS during monsoon and finalization of structure.
12. Feedback collection and monitoring of impact and radius influence of the constructed system. Popularization of the concept implemented through various media. Maintenance of constructed ASRS

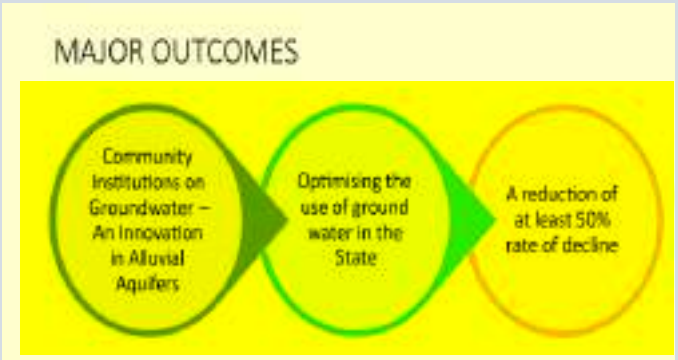




ATAL BHUJAL YOJANA HARYANA

(Sanction no- ABY/2122/26w/952-956 -Cluster06 and Sanction no -ABY/2122/27w/957-961 -Cluster07)

Under World Bank Assisted, Central Sector Scheme of GOI- Atal Bhujal Yojana is being implemented in 14 districts of Haryana by IWRD, Govt of Haryana. MRCAWTM has been engaged as District Implementation Partner for three districts- Faridabad, Rewari and Palwal for an initial duration of 48 months through two projects. The project is about participatory groundwater management utilizing funds through convergence mode. MRCAWTM has to develop Gram Panchayat wise Water Security Plans for 296 GPs of 7 administrative blocks involving Gram Sabha in the planning. The Village Water and Sanitation Committee has to be engaged for data collection for Supply side and Demand Side Management works. The project is approaching to fulfil following objectives:



DESERT HYDROGEOLOGICAL STUDIES-BARMER

Hydrogeological studies in Barmer district covering 5900Km2 for last 5 years is summarised below

1. **Depth of wells drilled ranges from120 to 165m (Chowkhla 270 m)**
2. **Water level ranges from 82 to 108 mbgl,**
3. **Zone tapped largely from 90 to 163mbgl, at Chowkhla 234-268mbgl**
4. **Length of slotted casing used 24 to 34 m but one 45m**
5. **Dia of casing/ slotted pipe used 254mm, bore hole dia 508mm**
6. **Depth of lowering of pump 90 to 117m by and large**
7. **Pump HP 20 to 30**
8. **Lignite zone found in two locations at Sheo 60 to 64m and at Siyag 136m**
9. **The Jagadia sandstone aquifer at Siyag having water level 72m bgl**

TEAM MRCAWTM

Founder Chair Professor **Late Dr D K Chadha**, Former Chairman CGWB
(13th April 2017- 30th Dec 2020)

Working Team

Overarching leadership	Dr N C Wadhwa, DG, MREI
ED & Dean Research	Dr Sarita Sachdeva, Professor, Biotechnology
Chair Professor	Dr Dipankar Saha, Former Member CGWB
Director	Dr Arunangshu Mukherjee, Prof & Head, ES&E & Former Scientist, CGWB
Dy Director	Ms Sneha Rai, Assistant Prof, ES&E, SET, MRIIRS
Associates:	Prof Nidhi Didwania, Director, MRCMPP Prof Brijesh Kumar, Dean Academics and Dr H S Saini, Former Director GSI
Research Associates:	Dr S Ali Khan, Sh Sandeep Punia & Mrs Priya Pahil
Field Research Team	Barmer-(2) Ballabhgarh (9) Khol-Rewari (4) Palwal (18) and Panchkula (3) TOTAL=39 person

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