GURUJAL SOCIETY

Mainstreaming DWWT and Rainwater Harvesting in Gurugram

CSE TRAINING ATTENDED AND YEAR

1. Ms. Nikita Jain – October 2019 – Green Campus
2. Mr. Sachin Kumar – February 2020 – Green Infrastructure: Effective measures to manage urban flooding and water supply
3. Ms. Shubhi Kesarwani – March 2020 – Basics of Decentralised Wastewater Treatment
4. Ms. Anjali Sharma and Ms. Sayani Halder – June 2020 – Basics of Decentralised Wastewater Treatment
5. Ms. Mehak Aggarwal and Ms. Sayani Halder – February 2021 – Advance Training Program on Decentralised Wastewater, Faecal Sludge and Septage Management
6. Ms. Y. Adarsha and Mr. Ashish Tiwari – April 2021 – Blended Online and Residential Training Programme on Preparation of Shit Flow Diagram (SFD)

LEARNINGS AND OUTCOME

1. Enhanced knowledge sharing with a vast number of water practioners across the country
2. Specialised skill development to integrate into design solutions
3. Development of strategies and plans to implement holistic solutions
4. Prevent pollution of waterways, promote green infrastructure and sustainable solutions

Presentation Topic: Evidence Based Design and Implementation for Grassroot Water Conservation Programmes.

Abstract:

GuruJal Society is an initiative of the District Administration Gurugram that dedicatedly is working towards tackling the groundwater crisis and associated problems in the District. Being the first of its kind initiative in 718 Districts of the nation, the organisation works at a grassroot level for designing and implementing engineered and customised solutions to conserve, recharge and recycle water. The organisation's daily operations are carried out by a Programme Management Unit (PMU) that works in tandem and under the supervision of the seasoned officers of the Government of India. While there are several challenges both in terms of the engineering and governance, the PMU members undergo continuous capacity development with organisations such as Centre for Science and Environment (CSE) to facilitate and create the largest impact on ground. Courses such as 'Basics of Decentralised Wastewater Technology', 'Advanced Training Program on Decentralised Wastewater, Faecal sludge and Septage Management' and 'Green Infrastructure Effective Measures to manage urban flooding and water supply' have all played an integral role in informing the team of GuruJal Society to work on nature based sustainable solutions. GuruJal Society currently works in the area of pond restoration and rejuvenation projects, such as Dhaula and Khentawas, where successfully decentralised wastewater technologies have been implemented that treat the wastewater generated by the local community, and is then discharged into the pond. The rejuvenated and restored pond serve as a natural ecosystem that allow for a biodiversity to flourish along with augmentation of groundwater. GuruJal Society is also responsible for functionalities of rainwater harvesting structures in the District. The organisation's initiatives are also strengthened by the integration of public education, information dissemination and incorporation of citizen feedback to create awareness around water conservation through focused workshops, Gram Panchayat Interactions, public outreach events and capacity development programs. Currently working with almost 24+ government departments within the District, it is of utmost importance that continuous capacity development along with grass root implementation of water conservation programs.

MATTER OF CONCERN – NEED OF FOCUSED AND COLLABORATIVE APPROACH, GURUJAL IS THE SOLUTION

GuruJal

01 Multiple Stakeholders (Govt., NGOs, Private Org.)

02 Lack of common vision

03 No single authority (Administration, GMDA, MCG)

04 Temporary solutions to issues

05 No fixed timeline

No Water Shortage, But Management Inadequate In India

"India does not have shortage of water but the management of water is not adequate. The need to institute national-level water awards spanning across sectors was strongly felt to encourage people to play their respective roles in conservation of water," Nitin Gadkari said.

All India | Press Trust of India | Updated: February 25, 2019 19:39 IST

GURUJAL STRUCTURE

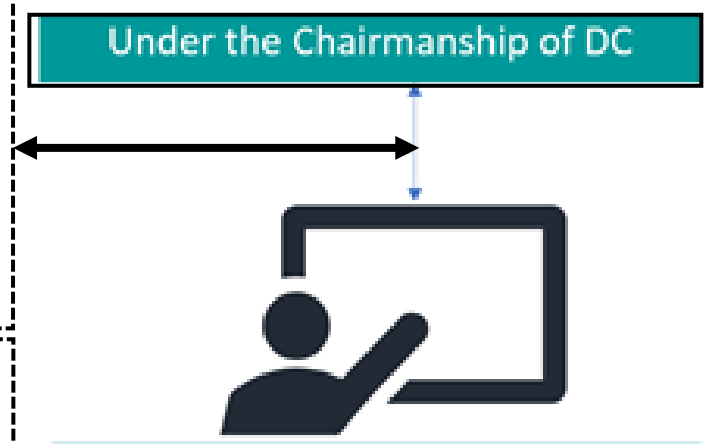
GuruJal Society was formulated by the **District Administration Gurugram** in **May 2019.** GuruJal is supported by the **Raman Kant Munjal Foundation (CSR initiative of Hero MotoCorp)** to ensure better water management in the district.

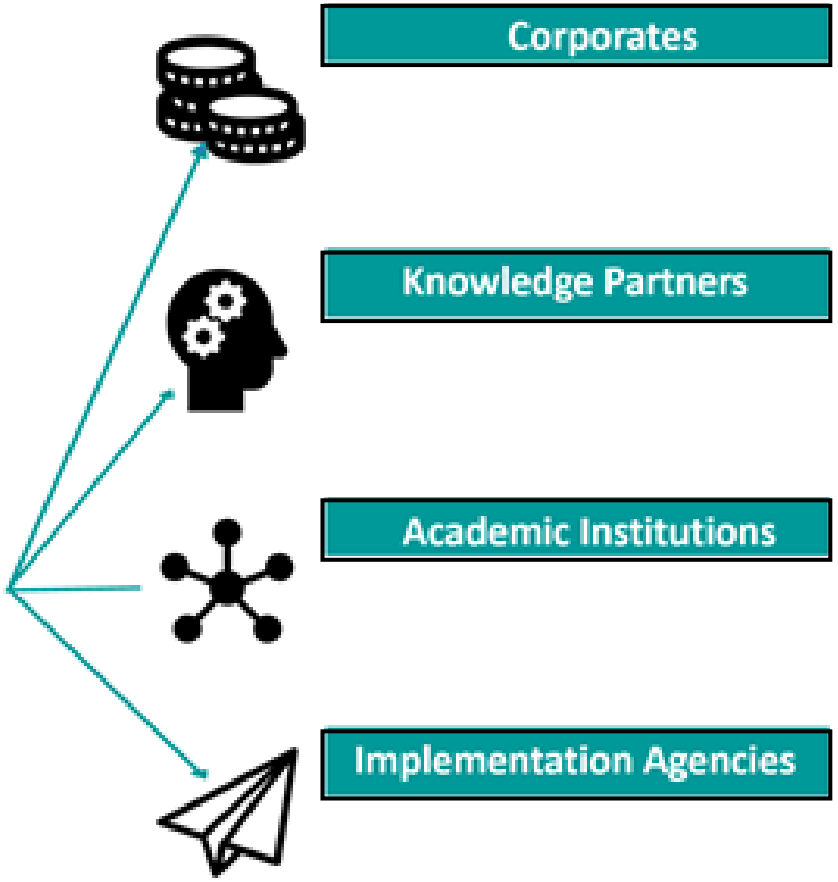
Chief Members

- Revenue Office
- MCG
- GMDA
- Development and Panchayat
- HARSAC

Other Members

- Hydrology Dept.
- Forest Dept.
- PHED Dept.
- HSVP
- DTCP
- Agriculture and Marketing Board
- Horticulture
- Irrigation
- Pond Authority





GURUJAL AIMS & OBJECTIVES

SUPPORTING COMPLIANCE	BETTER ENFORCEMENT	AWARENESS CAMPAIGNS	SUGGESTING POLICY CHANGES	INNOVATIVE DESIGN SOLUTIONS
Research and analysis of existing water initiatives	In-depth analysis		Holistic, collaborative and focused approach	
Strict and time bound monitoring	Innovative design solutions		Conducting campaigns, educational and awareness sessions	
Deploying staff members, interns/volunteers	Imparting training to the government officers		On boarding individuals or expert organizations to fulfill the targets.	

AREA OF INTERVENTION

SUPPORT A POND

WATER PROOFING

BIODIVERSITY MANAGEMENT · GURUJAL ·

CONNECT THE DROPS · GURUJAL ·

STEPS FOR RESTORATION & REJUVENATION OF POND

Pond Restoration & Rejuvenation Steps

- ✔ Pond Profiling
- ✔ Pre-feasibility
- ✔ Resolution and Demarcation
- ✔ Preparation of DPR
- ✔ Estimates and BOQ
- ✔ Community Mobilisation
- ✔ Cleaning and Levelling
- ✔ Setting of Treatment Plant
- ✔ Dewatering and Desilting
- ✔ Landscaping

Ongoing Ponds = 66

Potential to recharge water = 1,590 Million litres

Water enough for 32,319 people / year

Pond Profiling	Panchayati Raj	MCG Ponds	MCM Ponds
137	11	29	2

Completed Ponds = 6

Completed WWTP at Drain = 1

ONGOING PROJECTS

S. No.	Projects	Activities	Current Status
1.	Budhera	WWTP + Landscaping	WWTP Construction has partially completed along with fencing around the pond.
2.	Daultabad	WWTP + Landscaping	Construction of Settler along with collection tank is in progress.
3.	Bilaspur	WWTP + Landscaping	WWTP has been commissioned, currently landscaping work is in progress.
4.	Dharampur- GP	WWTP + Landscaping	Piping work with DEWATS system is taking place along with plantation in the constructed wetland is due to take place after monsoons.
5.	Palasoli	WWTP	Filter media is to be put in the root-zone area along with plantation within the WWTP.
6.	Wazirpur	WWTP	Construction of WWTP along with plantation in constructed wetland is on-going along with landscape around the periphery.
7.	Hariyahera	Landscaping	WWTP Construction work along with fencing has been completed.
8.	Kasan	WWTP	Collection chambers and inlet pipes are being constructed. Landscaping work will take place after monsoon.
9.	Tajnagar	WWTP	The capacity of the WWTP is currently being increased as per site conditions

COMPLETED PROJECTS

IQBALPUR

BEFORE

AFTER

Area of the Pond: 2.0 Acre

- Rainwater Pond
- Landscaping is done by D-Plan and Crowd Funding

Total Project Cost : ₹ 21.78 lakhs

- D-Plan fund : ₹ 20.28 lakhs
- Crowd Funding : ₹ 1.5 lakhs

HARCHANDRAPUR

BEFORE

AFTER

<u>Area of the Pond: 1.74 Acres</u>

- Rainwater Pond
- Landscaping is done by D-Plan

Total Project Cost : ₹ 11.62 lakhs

Funded by D-Plan fund

BOHRA KALAN

BEFORE

AFTER

Area of the Pond: 1.2 Acre

- Wastewater Pond
- Landscaping done under D-Plan and Crowd Funding

Total Project Cost: ₹ 14.57 lakhs.

- D-Plan : ₹ 13.97 lakhs
- Crowd Funding : ₹ 60,000

MOJABAD

BEFORE

AFTER

<u>Area of the Pond: 1.2 Acre</u>

Wastewater Pond

WWTP : Root Zone Technology(100 KLD)

Total Project Cost: ₹ 28.64 Lakhs

D-Plan : ₹ 22.64 Lakhs

Crowd Funding: ₹ 6.0 Lakhs

KHENTAWAS

BEFORE

Area of the Pond: 1.1 Acre

Wastewater Pond

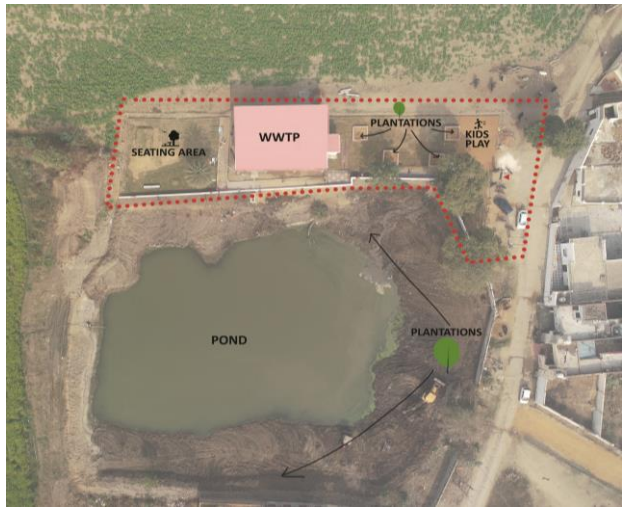
WWTP : Advanced Eco Reactor (150 KLD)

Total Project Cost: ₹ 69.94 Lakhs

D-Plan : ₹ 24.92 Lakhs

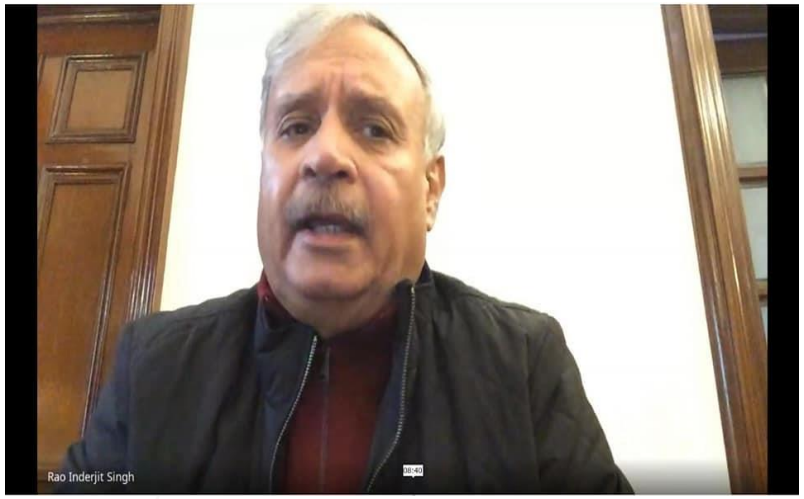
CSR (ICICI Bank) : ₹ 25.00 Lakhs

Crowd Funding : ₹ 10.02 Lakhs

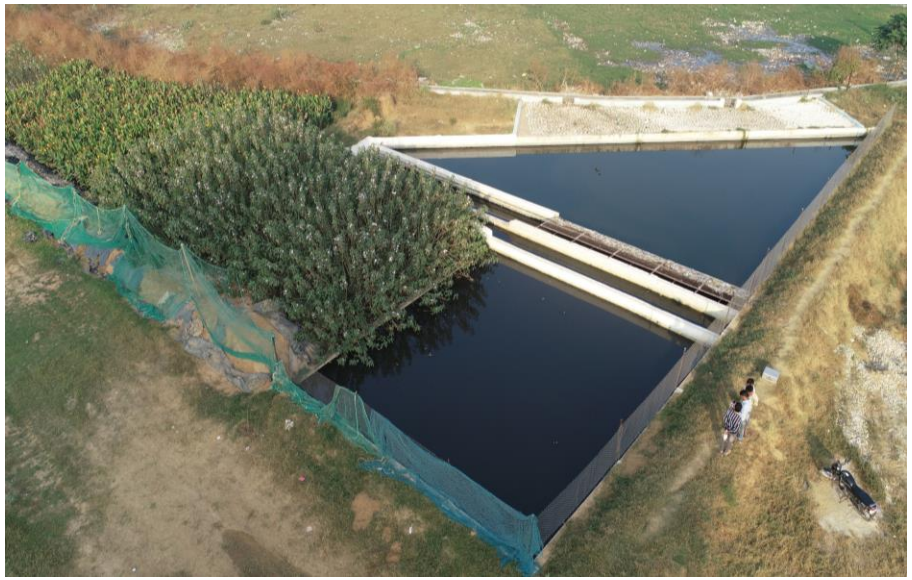


AFTER

INAUGRATION – KHENTAWAS AND MOJABAD



NAWADA



WWTP : Phytoremediation (385 KLD)

AFTER

Total Project Cost: ₹ 45.00 Lakhs

D-Plan : ₹ 8.7 Lakhs

CSR Fund : ₹ 5.0 Lakhs

Fund Required : ₹ 31.3 Lakhs

DHAULA

BEFORE

AFTER

Area of the Pond: 1.3 Acre

Wastewater Pond

WWTP : Root Zone Technology (200 KLD)

Total Project Cost: ₹ 26.89 Lakhs

D-Plan : ₹ 25.00 Lakhs

PILOTED DECENTRALISED WWTP TECHNOLOGIES

S. No.	Technology Name	Brief Description	Capacity Installed
1.	**Root Zone System**	The rootzone technology is dependent on the natural process of the gravity based physical filtration. Flow of wastewater is then through the planted reedbed where the water travels in a sinusoidal nature, and is treated through aerobic-anoxic-anaerobic-anoxic-anaerobic conditions. The wastewater passes through the gradients of various stone aggregates.	100 KLD – 350 KLD
2.	**Advanced Eco Reactor**	The AER Technology is based on using the principles of sedimentation along with the process of combining both the physical treatment of filtration with biological treatment.	150 KLD
3.	**Moving Bed Biofilm Reactor**	Moving Bed Biofilm Reactor - This reactor contains filter material that is stored within a tank. Aeration is provided, that allows the biofilm to develop as the wastewater trickles through the filter media.	100 KLD
4.	**Phytoremediation**	Phytoremediation is the biological process carried out by green plants removal, degradation, or containment of contaminants (hazardous chemicals) in soils, sludges, sediments, surface water and groundwater.	385 KLD
5.	**DEWATs**	The DEWATS system is based on the physiochemical treatment of wastewater through various units such as a settler, followed by an ABR and a constructed wetland.	100 KLD – 450 KLD
6.	**Bio-filter + Ozonation**	Bio-filters or naturally occurring filters such as wooden chips with large surface areas are used for the removal and entrapment of particulate molecules along with the biological catalyst of enzymes produced during vermi-composting which is followed by the disinfection process of ozonation.	250 KLD

OPERATIONS AND MAINTENANCE

DHAULA POND CLEANING

KHENTAWAS EMBANKMENT CLEANING

Operations and Maintenance of Sites is done with regular site updates from our on-staff field team who continuously supervise the sites for the following activities

- Embankment Cleaning
- Pond Surface Cleaning
- Screen Cleaning and
- WWTP Functioning and Operations
- Log Book Maintenance

Along with the above activities, the water quality checks are done on a periodic basis to check the efficiency of the WWTP Plant.

WATER PROOFING

Total No. of RWHs = 640

Potential to recharge water = 1448 Million litres

Water enough for 16,053 people / year

MCG RWHs **413**	MC Sohna RWHs **76**	MC Pataudi RWHs **13**
MC Hailey Mandi RWHs **8**	MC Farukhnagar RWHs **6**	Rural RWHs **124**

An area of 100 Sq.m roof top area can save

RAINWATER HARVESTING

44, 800 Liters

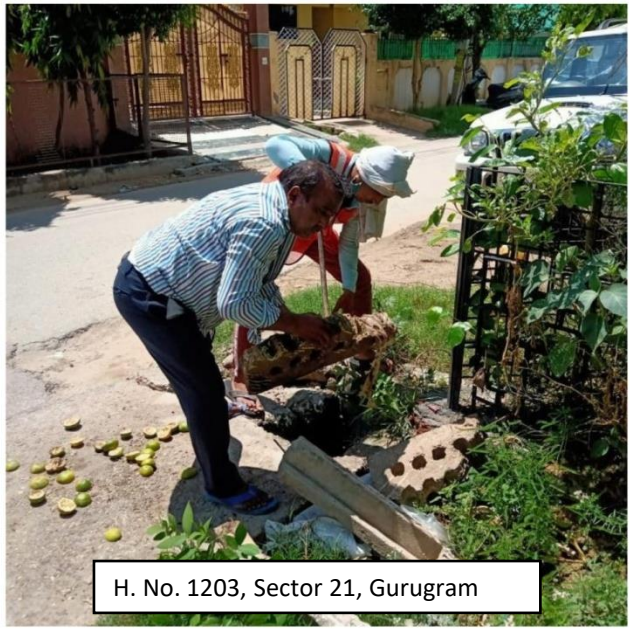
Annually

Total Potential of water recharge in 572 Government schools = 304 Million litres per annum

Near YS Gupta JC House Residence,
Ward No.6, Sec.14, Gurugram

Shiv Murti Park, Pataudi Block

Moti Dungri Park, Pataudi Block

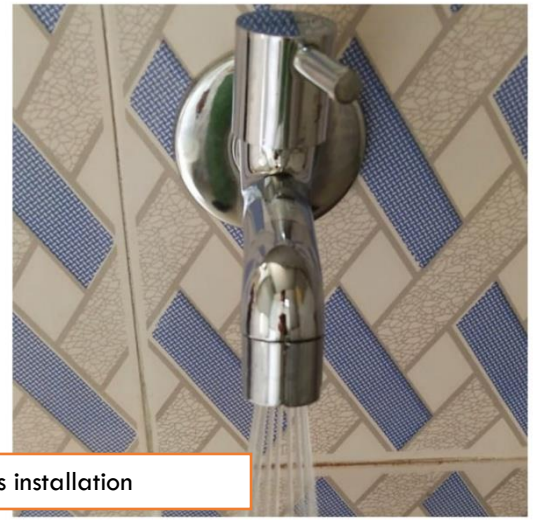


H. No. 1203, Sector 21, Gurugram

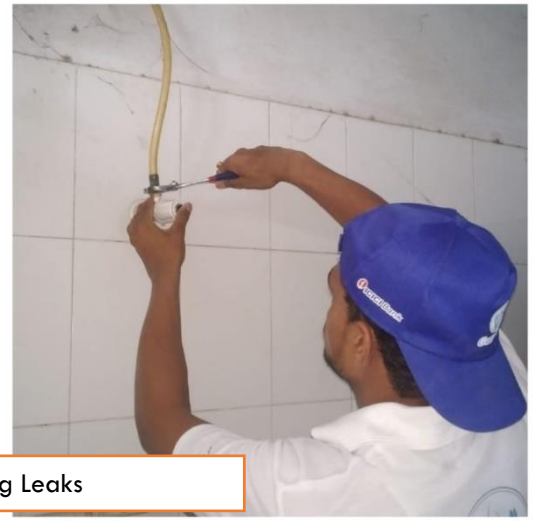
WATER PROOFING

Cleaning and Checking of
Rainwater Harvesting Systems

157 Structures have been cleaned in Public areas of MCG in the past monsoon season in 2021



Aerators installation



Fixing Leaks

Resolving public complaints
on leakage at Sector 56, Gurugram

WATER PROOFING

Fixing Leakages &
Installation of Aerators
Water Saved : 250 KLD

WATER PROOFING

47 Waterless Urinals

Water save : 7040 KL per annum

ENFORCEMENT DRIVE : RWH CHECKING

Rainwater Harvesting Enforcement Drive is being conducted in the large establishments of Gurugram district. Aim of the enforcement drive is to ensure the implementation of rainwater harvesting in the district as per the guidelines through conducting functionality checks of the existing RWH structures and repairing of the structures where needed.

Total Number of Structures Checked:
250

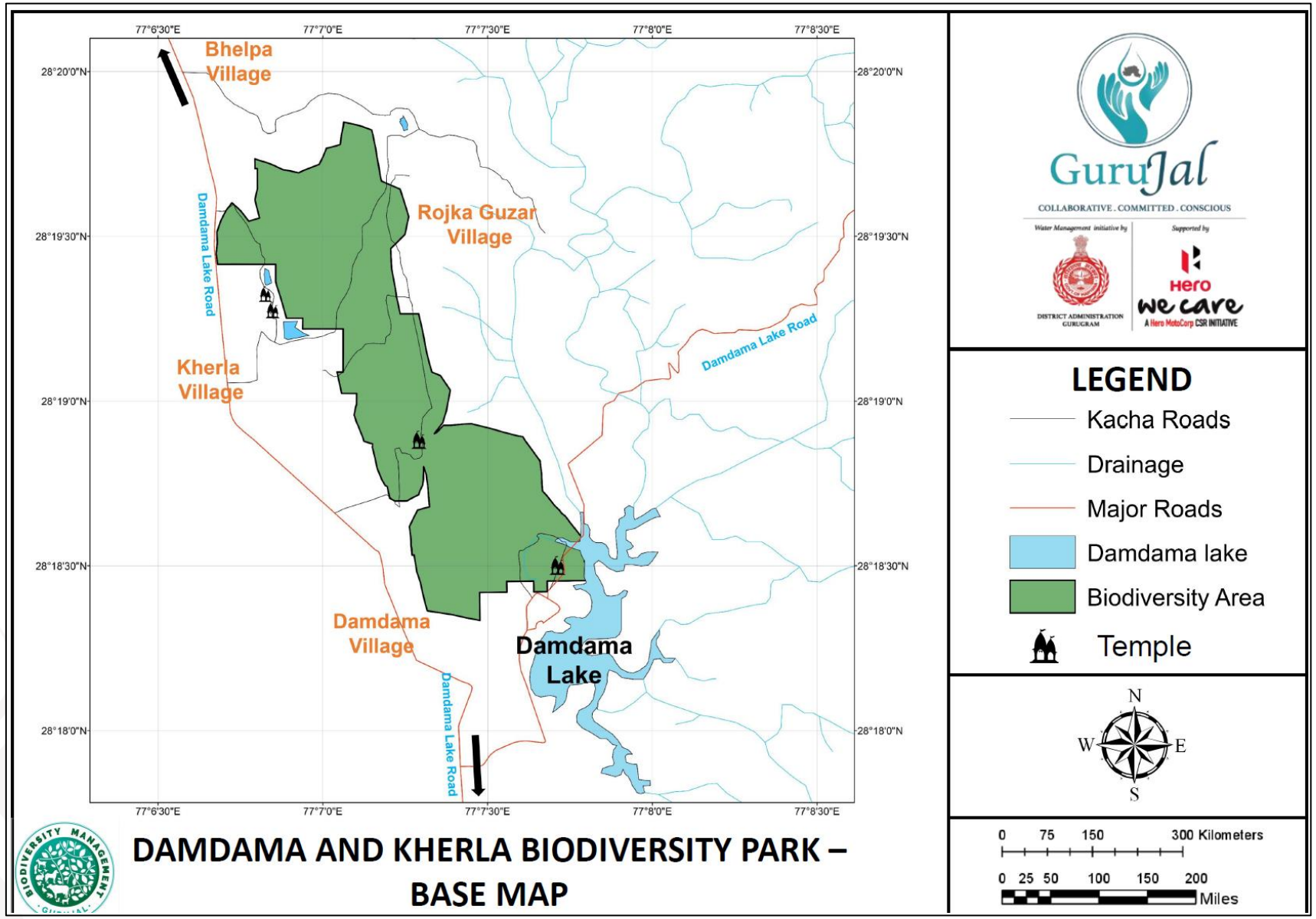
Fixing Leaks in Govt. Buildings = **20**
Potential to save water = 150 KLD

Total No. of Aerators installed = 8650
Potential to save water= 250 KLD

Resolution of water related complaints = **500+**
Potential to save water - 350 KLD

Providing design support to private citizens = **20+**
Potential to save water = 891 KL

DESIGN SOLUTIONS TO PROMOTE MULTI-FACETED APPROACH TO WATER CONSERVATION

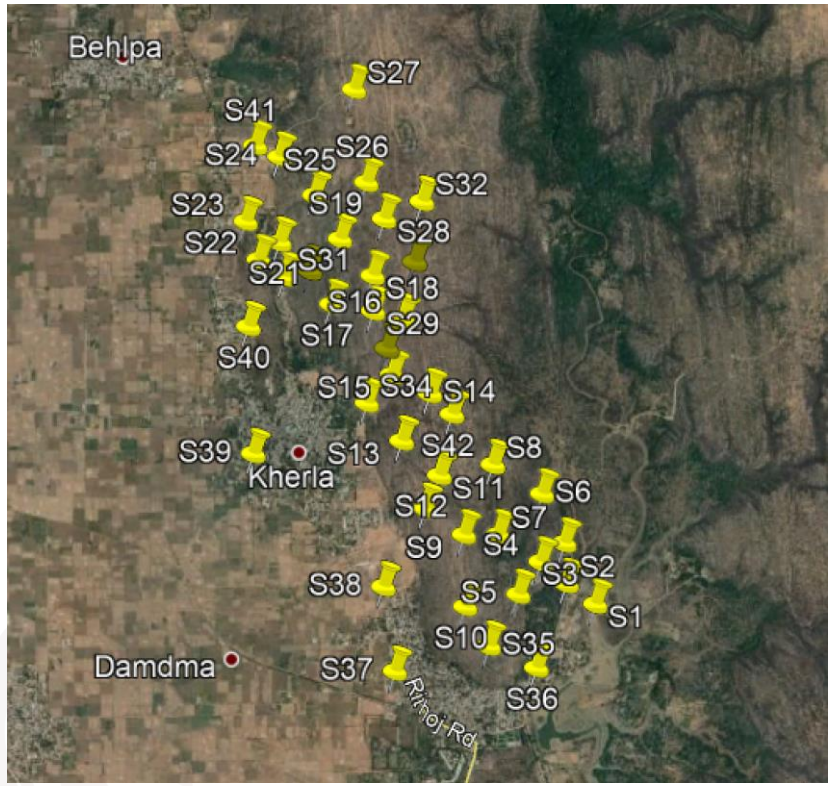


Area of Biodiversity park: 420 Acres

Carbon Sequestration : 67536 MT in 15 years

Damdama and Kherla Biodiversity Park Location

PRE-STUDY: SOIL SAMPLING



MAPPED LOCATIONS OF SOIL SAMPLING

BIODIVERSITY EXPERT AND FIELD TEAM CARRYING OUT SOIL SAMPLING

Plantation at MGNREGA women workers, Iqbalpur

Plantation by Nirmala Foundation

Plantation at Iqbalpur by Sarpanch

Plantation by Urja Samati

Plantation Drives across the district

In a Plantation Drive that had been initiated pre-monsoon 2021, **23 were RWAs and 72 were NGOs and total demand of plants raised is 40,000 saplings**. GuruJal team also visited all the registered RWAs to verify the site conditions and resources available.

COMMUNITY ENGAGEMENT TO PROMOTE MULTI-FACETED APPROACH TO WATER CONSERVATION

14000+ No. of people reached

160 Focused Workshops

82 Capacity Building and Review Meetings

339 Public Outreach Events

22 Community Mobilization

Community Mobilization Van

Interactive session with Dr. Kiran Bedi

Medawas (Focused Workshop)

Capacity Building Session

Community Mobilization

Public Outreach events, Capacity Building & Focused Workshops

WEBINARS

Nodal Officer of Catch the Rain Campaign for the District of Gurugram

Session With Kiran Bedi Ma'am From Navjyoti India Foundation To Increase Awareness About Catch The Rain Campaign

Online video campaign addressed by political leaders, administrative officers, sports personalities and other influencers and active citizens has been launched with an aim to create awareness among public for rainwater harvesting's importance and guidelines.

Collaborative | | Committed | | Conscious

THANK YOU