No. ABY/2122/27w/957-961 Date: 04/08/2021

To:

Ms/ Manav Rachna International Institute
of Research and Studies, Faridabad,
Head Office, 5E/1-A, Bungalow Plot,
N.I.T. Faridabad, Haryana 121004
Email Id:- arunangshu.fet@mriu.edu.in

**Subject:-** Letter of Acceptance for the work of "Engagement of District Implementation Partner to support in Implementation of Atal Bhujal Yojana Atal Jal for Cluster 07 District Palwal Blocks Palwal, Hassanpur, Hathin, Hodal" (Tender ID:- 2021_WBIRR_162978_7)

This is to notify that your Bid for **"Engagement of District Implementation Partner to support in Implementation of Atal Bhujal Yojana Atal Jal for Cluster 07 District Palwal Blocks Palwal, Hassanpur, Hathin, Hodal"** for the Contract Price **Rs. 48396000/- (Rupees Four Crore eighty three Lakh ninety six Thousand only)** for the period of 48 months for 185 Nos. Gram Panchyat (GPs) as corrected and modified in accordance with the Instructions to Bidders is hereby accepted.

You are requested to furnish Performance Security, in the form detailed in Clause 19.3 for amounts of Rs. **1451880/-** It is requested to visit this office and sign the contract with submission of Performance Security, failing which action as stated in ITB Clause 45.2 will be taken.

D/A:- Copy of Approval of rates

Executive Engineer/Atal Jal
Irrigation & W.R. Department
Haryana, Panchkula.

Copy to:

1. Chief Engineer/LCU, Irrigation & Water Resource Department Haryana, Panchkula for information Please.
2. Sub Divisional Officer/Atal Jal-1 for information necessary action.
3. Sub Divisional Officer/Atal Jal-2 for information necessary action.
4. DAO/Atal Jal for information Please.

No. 06 /ABJ/2021 Dated:- 04 /08/2021.

To

The Executive Engineer/Atal Jal,
Irrigation & Water Resources Department,
Haryana, Panchkula.

Subject: Approval of rates for the work of *"Engagement of District Implementation Partner to support in implementation of Atal Bhujal Yojana (Atal Jal) for Cluster-07 District: Palwal (Blocks Palwal, Hassanpur, Hathin & Hodal)".*

Kindly refer to your office U.O. No. 916/ABY dated 03.08.2021 on the subject cited above.

2. The tender for the subject captioned work was put up in the meeting of Department High Powered Purchase Committee held on 22.07.2021 under the chairmanship of Sh. Manohar Lal, Chief Minister, Haryana. After deliberation, the Committee has finalized the tender in the favour of *"M/s Manav Rachna International Institute of Research and Studies, Faridabad"* for a total consideration of Rs. 4,83,96,000/- inclusive of all taxes. Accordingly, description of item, quantity & total amount are approved as under:-

| Description of item | Qty. | Total Amount |
|---|---|---|
| Engagement of District Implementation Partner to support in implementation of Atal Bhujal Yojana (Atal Jal) for Cluster-07 District: Palwal (Blocks Palwal, Hassanpur, Hathin & Hodal). | One Lot | Rs. 4,83,96,000/- (Rs. Four crores eighty three lakhs & ninety six thousand only). |

The above approval is subject to the following conditions: -

1. Change of name of the Company/Agency: During the period of tenure, if the name of the company/agency has undergone a change due to acquisition, amalgamation etc., the company/agency shall inform the Department within one month. In such cases, all the obligations under the contract with the Department should be passed on for compliance to the successor company.
2. The services and deliverables by the selected Agency must ensure compliance to relevant e-Governance Policy Accessibility guidelines and all other relevant standards and guidelines published by Govt. of India or Govt. of Haryana as may be applicable from time to time.
3. Force Majeure: For the purpose of this clause, 'Force Majeure' shall mean an event that is unforeseeable, beyond the control of the parties and not involving the parties' fault or negligence. Such events may include acts of the Government either in its sovereign or in its contractual capacity, war, civil war, insurrection, riots, revolutions, fire, floods, epidemics, quarantine, restrictions, freight, embargoes, radioactivity and earthquakes. The Agency shall not be liable if the delay in the discharge of its obligations under this agreement is the result of an event of Force Majeure as defined above.

*Continue at Page ...2..*

4. If a Force Majeure situation arises, the empanelled Company/Agency shall promptly notify to the concerned department in writing of such conditions and the cause thereof. Unless otherwise directed by the concerned department in writing, the empanelled Company/Agency shall continue to perform its obligations under this Agreement, as far as it is reasonably practical and shall seek all reasonable means of performance not prevented by the Force Majeure event.

5. Deployment of Manpower:- Selected Agency should be responsible for the deployment of manpower within the 15 days from the signing of the contract.

6. Replacement:- Any Staff/Personnel of The Manpower providing Agency, found misfit or indulging into indiscipline Act or found medically unfit shall be immediately removed henceforth and immediate replacement (with departmental Approval within 10 days) accordingly shall be made by Agency, at the same time at no extra cost.

7. Penalty: If the Selected agency fails to deploy the all manpower within 15 days after the signing of agreement, the penalty shall be imposed @1000/- per day on each resources.

8. Agency will be responsible for any replacement (after first deployment) within 10 days otherwise @1000/- per day on per resources will be imposed.

9. If the Bidder fails to provide CVs and staff with required qualification and experience then the bid will be treated as non-responsive.

10. Bidders are encouraged to engage Community mobilizers/Volunteers to assist in project implementation at village levels.

11. If any of the staff/experts are not found suitable for the designated task/post as mentioned above; then the employer will have every right to demand for replacement and the Agency (DIP) shall replace the same with the competent ones, within a month of receipt of letter from the employer.

12. Agency will not replace any of the specialists except extreme circumstances.

13. The above approval is subject to the conditions that all codal & accounts formalities required under the rules/guidelines/instructions issued by the competent authority, should be followed and all terms & conditions laid in DNIT & Bidding Document be also adhered to strictly.

14. *If any discrepancy is noticed in the above approval, matter may be referred to this office for rectification before entering into agreement, immediately.*

Superintendent,
for Project Director/ABJ, I&WR Deptt.,
Haryana, Panchkula.

**Manav Rachna International**
**Institute of Research and Studies**
(Deemed to be University under section 3 of the UGC Act 1956)
**Manav Rachna Centre for Advance**
**Water Technology & Management (CAWTM)**

सिंचाई एवं जल संसाधन विभाग
हरियाणा

# INCEPTION REPORT, WORK PLAN & BESE LINE REPORT

## Cluster-07 Palwal

By District Implementation Partner (DIP):

**Manav Rachna International Institute of Research and Studies MRIIRS**


Submitted to: **The EIC/ LUC Cum Project Director,**

## ATAL BHUJAL YOJANA (ATAL JAL)

जल पंचायत के माध्यम से महिलाओं को किया जा रहा जागरूक: वारिश खान

पलवल ■ मेट्टी मोहिया

अटल भूजल योजना के तहत जिला कार्यान्वयन घाघीदार मानव रचना की टीम की अगुवाई में ग्राम पंचायत दुर्गोपुर में गांव के लोगों से मिलकर उन्हें जागरूक किया तथा उन्होंने पुरुष और महिलाओं के साथ जल पंचायत का आयोजन किया, जिसमें गांव के लोगों ने काफी उत्साह के साथ भागीदारी ली। लोगों को जागरूक करते हुए आईसी एक्सपर्ट गोविन्द माधव ने कहा की अगर इसी गति से जल का दोहन होता रहा तो वो दिन दूर नहीं जब खेतों को जल संकट का सामना करना पड़।

उन्होंने कहा कि पुरुषों के साथ-साथ महिलाओं ने भी घरेलू कार्यों के लिए जिस तरह से जल का दुरूपयोग किया है उन्हें भी अपनी जिम्मेदारी समझनी होगी। जब तक लोग जल बचाने के लिए दैनिक व्यवहार में बदलाव नहीं करते तब तक पानी के व्यर्थ उपयोग को नहीं रोका जा सकता। जल को हर एक बूंद का उपयोग सही तरीके से होना चाहिए ताकि हम आगे आने वाली पीढ़ियों के लिए जल भंडार को सुरक्षित रख सके, क्योंकि जल के ऊपर जितना अधिकार हमारा है उतना ही आने वाली पीढ़ियों का भी है।

अभिषेक और अशोक ने बताया कि किस तरह से लोग फसलचक्र को बदलकर जल को बचा सकते हैं, जिन फसलों को कम जल की आवश्यकता होती है, हमें उन फसलों की खेती पर जोर देना चाहिए। सिंचाई की विधि में बदलाव करके भी जल को बचाया जा सकता है, जैसे सिंकलर, ड्रिप पद्धति, अंडरग्राउंड पाइपलाइन जैसी विधियों का प्रयोग करके पानी के खर्च को कम किया जा सकता है।

उन्होंने कहा कि आज आपके पास जल की उपलब्धता है, इसलिए आप सोच नहीं पा रहे हैं, लेकिन जब कल जल ही नहीं होगा तो लोग खेती ही नहीं कर पाएंगे। अमित और आकाश ने बताया कि किस तरह से रिचार्ज बोरवेल लगाकर जलस्तर को बढ़ाया जा सकता है। वाटर ट्रीटमेंट प्लांट लगाकर गांव के रुकजित पानी को साफ करके खेतों व अन्य कार्यों में प्रयोग किया जा सकता है।

गौरतलब है कि राहुल ने वाटर ट्रीटमेंट स्ट्रक्चर के लिए साइट इन्सपेक्शन किया। लोगों ने भी अपनी मांग रखते हुए गांव में रिचार्ज बोरवेल लगाने की मांग रखी, क्योंकि यह क्षेत्र भूजल की समस्याओं से ग्रस्त है। यहां फसल को बरसाती मौसम में अधिक वारिश होने के कारण काफी नुकसान भी झेलना पड़ता है। वारिश ज्ञान सुकेडिया ने बताया कि जल पंचायत के माध्यम से महिलाओं को जागरूक किया जा रहा है।

- MICADA
- MPMV
- PMKSY
- MGNREGA (WC/NRM)
- RKVY-UGPL
- GPDP- Hamari Yojna Hamara Vikas
- Jal Shaktyi Abhiyan-I&WRD
- Pond and Waste water Management Authority


December 2021

**INDEX OF REPORT: CLUSTER 07(PALWAL)**

# 1. INTRODUCTION

## A. Brief note on cluster background:

For Atal Bhujal Yojana, Haryana has been divided in to 9 clusters and for these clusters 5 DIPs were engaged. Centre for Advance Water Technology and Management, Manav Rachna International Institute of Research and Studies (MRIIRS) through tender has been selected as District Implementation Partner (DIP) under Atal Bhujal Yojana (ABY) for cluster 07 (Palwal) and letter of LOA has been issued vide LOA No. ABY/2122/27W/957-961 dated 04.08.2021 and same was accepted and signed on 11.08.2021 for Atal BhujalYojna. The ABY project duration is for 48 months and performance security for the same as per clause 19.3 for amount of Rs. 1451880 has been deposited. Cluster 07 includes Palwal (41), Hathin (75), Hodal (34) and Hassanpur (35)blocks incorporating 185 Gram Panchayat (Table 1.1). Palwal district is located within NCR in the South eastern part of Haryana(Fig 1.1).

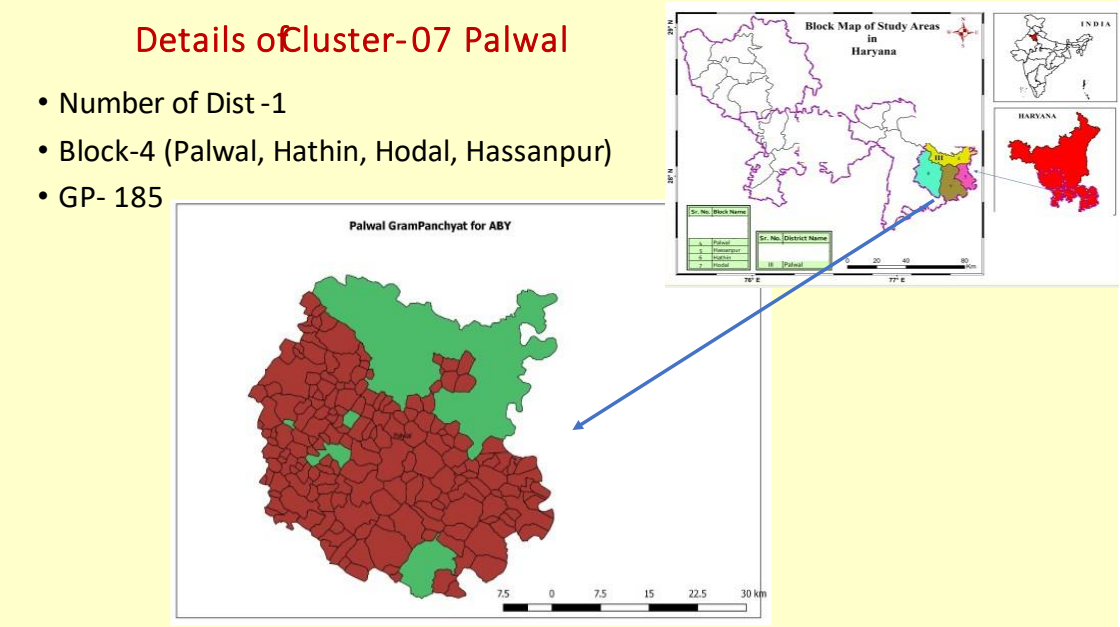



Fig 1.1 Location map of cluster 07 (Palwal)

Table 1.1 Details of cluster-07 under ABY Haryana

| SN | DISTRICT | BLOCK | GPs | Remarks |
|---|---|---|---|---|
| 1. | Palwal | Palwal | 41 | Palwalis |
| | | Hathin | 75 | |
| | | Hodal | 34 | |
| | | Hassanpur | 35 | |
| TOTAL | | | 185 | |

## B. Brief note on Atal Bhujal Yojana:

Department of Water Resources, RD & GR (MOWR RD & GR), Ministry of Jal Shakti is implementing Atal Bhujal Yojana (Atal Jal) with World Bank assistance in select water-stressed areas of seven States of the Country viz., Gujarat, Haryana, Karnataka, Madhya

Pradesh (MP), Maharashtra, Rajasthan and Uttar Pradesh (UP). The scheme is designed to facilitate sustainable management of groundwater in a holistic manner by involving the concerned Central and State Government machinery, PRIs, NGOs, WUAs, Farmers and other stakeholders. In view of the multi-disciplinary nature of the scheme and involvement of grass root level stakeholders in the scheme implementation, District Implementation Partners (DIPs) are engaged. Atal Bhujal Yojana was launched by Hon'ble Prime Minister Shri Narendra Modi on 25.12.2019 for a period of 5 years. In Haryana 36 blocks of 14 districts is included under Atal BhujalYojna comprising 1669 Gram Panchayat. These blocks were selected based on status of Ground Water extraction. The main objective of this project is to develop **Sustainable groundwater management through participatory approach** and for this, two components were identified:

- Institutional strengthening and capacity building
- Development of incentive disbursement linked indicators

The unique feature of Atal BhujalYojna is aimed at

- Behavioural change at ground level
- Promote demand site management
- Bottom-up approach of planning
- Incorporates principle of challenge method

**Four-pronged strategy has been adopted for Atal BhujalYojna which includes:**

1. Making invisible – visible – decision support tool for ground water management
2. Ground water as commence-strengthen community-based institutions to foster management
3. Improve water use efficiency and enhance ground water recharge
4. Fiscal decentralization

**The major expected outcomes are**

- Community institution on groundwater- an innovation in alluvial aquifer
- Optimizing the use of groundwater within the selected districts/blocks
- Reduction of at least 50% rate of decline in water level

To achieve the aforesaid objectives, State Project Management Unit (SPMU) is constituted under the overall supervision of State Inter-departmental steering Committee at state level supported by Technical Support Agency (TSA)(Table 1.2). SPMU works in close coordination with National Project Management Unit (NPMU) headed by Director, NPMU at Ministry level. At district level, under the leadership of District Commissioner, District Project Management Unit (DPMU) has been constituted supported by Ground water and IEC Expert. For Gram Panchayat level implementation of the project District Implementation Partners (DIP) were identified. Irrigation and Water Resources Department, IWRD, Haryana has been nominated as the Nodal Agency under the leadership of Director, Atal BhujalYojna. The AC and Executive Engineer of the respective districts are nominated as Nodal Officers for implementing the scheme. Manav Rachna

International Institute of Research and Studies has been interested with two DIP for Cluster 6 & Cluster 7.

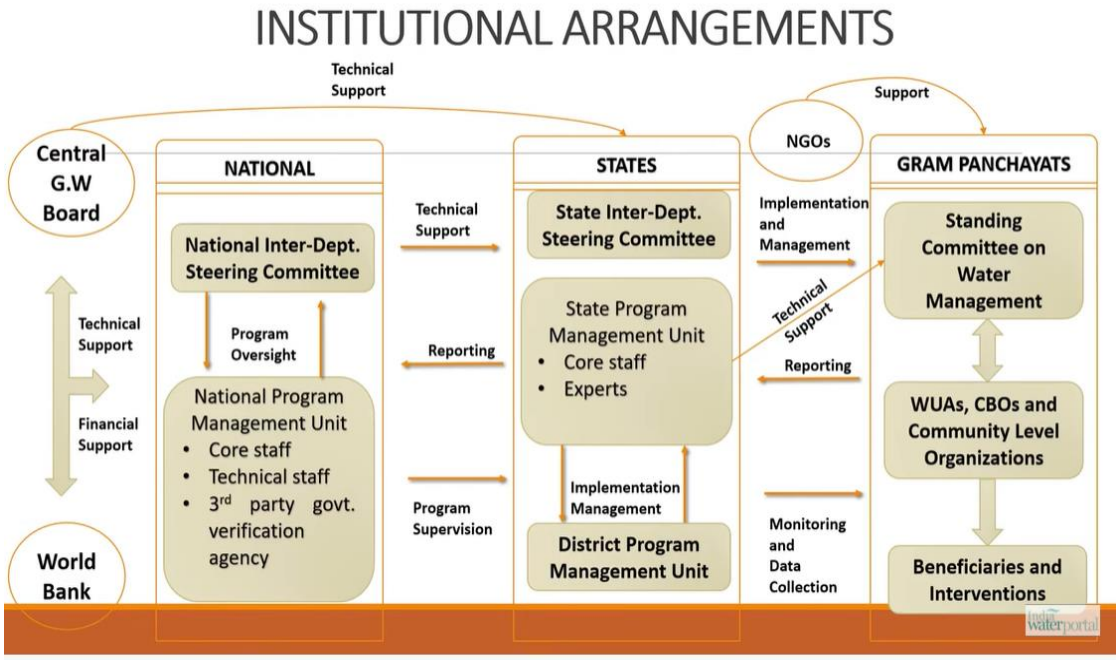



Fig 1.2 Institutional Arrangement under Atal Bhujal Yojana

## C. Role and Responsibility identified for DIP:

The overall objective of the assignment to DIP is to provide support services to Gram Panchayats (GPs) & District Program Management Unit (DPMU) for effective implementation of Atal Bhujal Yojana. The assignment specific objectives are listed below.

The services to be rendered by the District Implementation Partners(DIPs) during various stages of the scheme (i.e. start-up, preplanning, planning, implementation, and exit) are presented below. The entire work will be carried out in four years (48 months from the date of commencement) under the guidance and direction of the DPMU / SPMU office. The proposed tasks are presented below.

**1Start-up / pre planning activities**

**A. Preparation of inception report and work plan**

1. Introductory meeting with district level officers and conduct rapid assessment of selected villages under Atal- Jal in the district.
2. Preparation of inception report along with scheme work plan in selected GPs for taking Atal-Jal work forward (with reference to Deliverable linked incentives (DLIs)

**B. Preparation of baseline report (Ref. to DLIs)**

1. Finalization of baseline format
2. Undertake Baseline survey in all selected villages and prepare village profile
3. Update the hydrological, meteorological, water conservation and agriculture data, etc on regular basis
4. Preparation of baseline report in suggested format

## 2 Community Mobilization

### A. IEC campaign

1. Prepare district specific IEC and Behavioral Change Communication(BCC)plan
2. Disseminate basic information about Atal-Jal in selected villages - Atal Jal-concept, objectives, guiding principles, components, intuitional arrangement, key stakeholders etc.) through various communication tools- orientation meeting, awareness workshops, rally, film show, corner meetings etc..
3. Organize Inter Personal Communication (IPC) activities in selected villages for ensuring that the project key information reach all Household level(HHs).
4. Motivate community with a view to bring about behavioral changes from the role of passive beneficiary to active participants in Atal Jal.
5. Conduct IEC on technical and social topic – GW act, ground water recharging, water budgeting, demand creation for micro-irrigation, implementation of artificial recharge structure, rain water harvesting, government on-going scheme, etc.)
6. Prepare IEC tools for facilitating efficient use of water in all sectors – domestic level, agriculture, small business etc.
7. Facilitate usage of social media/ mass media for reaching all HHs in the selected project villages/GPs
8. Conduct IEC / BCC activities as directed by district/state
9. Develop Village information center at each village/GP for dissemination of GW related data for public.

### B. Community mobilization and strengthening of village / GP level institutions (GP / VWSC/ CBOs)

1. Prepare community mobilization plan based on rapid assessment exercise and facilitation of same (with reference to DLI). Organize GP / village level orientation workshops, working session of key stakeholders and orient them on Atal-Jal
2. Conduct meeting with Community Based Organizations(CBOs) for creating awareness on water issue and trigger them for adopting water saving technologies
3. Identify Community mobilizers/Volunteers for each Village and train them in GW level monitoring, water quality sample collection and Rainfall.
4. Undertake the social mobilization activities for creating enabling environment for project execution- ensure active participation women, weaker section groups, CBOs etc.
5. Facilitate meetings of all village / GP level stakeholders and community consensus on participatory decision-making, social actions, ownership etc. and relevant record keeping, preparing proceedings and documentation.
6. Assist GP in organizing Gram Sabha- Women / General and share basic information about Atal Jal.
7. Facilitate process for Village level institutions rejuvenation / formation and strengthen them in understanding and discharging their roles and responsibilities effectively.
8. Develop leadership skill among GP/ VWSC/CBOs members.
9. Assist DPMU for creating enabling environment for implementing Atal-Jal at all level by executing IEC and CM plan
10. Conduct training of village level institutions-GP members/ VWSC members/ CBO representative on their role in Atal-Jal and implementation of GW Act.

## 3. Action planning process and preparation of WSPs

### A. Facilitate participatory assessment and preparation of WSPs

1. Collection of secondary data- village information from Gramsevak, Talathi, Agriculture assistance, Multipurpose Workers (MPW), Panchayat Samiti etc. required for water budgeting exercise and WSP preparation.
2. Conduct orientation of key stakeholders on participatory planning process.
3. Assessment through participatory techniques like Participatory Rural Appraisal (PRA) for mapping current challenges in the villages and undertake water budgeting, water balance estimation through method prescribed by SPMU/DPMU.
4. Collect secondary information of each village and conduct hydrogeological survey,
5. spatial analysis, drainage line inventory, cropping pattern and micro irrigation inventory for preparation of WSPs, as per protocol designed by SPMU.
6. Finalize WSPs as per the prescribed process and in the prescribed formats.
7. Annual updation of WSPs and water budgeting.
8. Organize and facilitate Gram Sabha- ensure participation of all community members and other stakeholders in the village, and get the Gram Sabha approval to WSPs
9. Assist district during WSP appraisal process.
10. Support DPMU to consolidate the water security plans, along with cost estimates for onward submission to SPMU for approval.

## 4. Implementation

### A. Implementation preparation

1. Provide assistance to DPMU/SPMU in preparing village / Cluster / district procurement plans as suggested in manual/guideline
2. Provide support to DPMU/SPMU for procurement of works and goods
3. Provide necessary support to district for awarding works and finalize construction schedule.

### B. Implementation facilitation

1. Assist GP / VWSC for facilitating implementation of water security plan through convergence.
2. Undertake close monitoring for ensuring quality of works, goods and services
3. Encourage the community through various communication tools / technique for demand creation for adopting water saving practices and recharging GW, roof top rainwater harvesting, soil and water conservation, etc as per WSP.
4. Take close follow up with line department and mobilize resource for increasing area under micro-irrigation, changing cropping pattern etc.
5. Triggering community for adopting efficient water use practices / technologies at farm, house, and village level.
6. Facilitate convergence and coordination of various on-going Government schemes.
7. Provide technical support to DPMU/SPMU for establishing mechanism for public disclosure of ground water related data and information.
8. Provide assistance to GP / VWSC in preparing project completion report
9. Provide assistance during selection of sites for equipment installation towards establishment of hydrological monitoring network and measurement and get necessary documentation done.
10. Deploy tools and techniques to enhance community participation in implementation and ensure transparency.

## 5.Exit & O & M

1. Build capacity of key stakeholders on O & M of supply side structures and exit process
2. Assist GP in working out O & M arrangement and its strengthening through meetings / working session, on the job support, process demonstration etc.
3. Record all the assets created under project in the GP asset register.
4. Complete handing over and exit process
5. Build capacity of key stakeholders for post project management
6. Assist GP in resolving disputes, beneficiary complaints

## 6. Other - On-going services

### A. Capacity building

1. Designing of training outline, schedule and resource materials for facilitating trainings during various stages of scheme implementation.
2. Facilitate block / cluster and GP / village level trainings to equip and support various stakeholders for functioning effectively during various stages of scheme implementation i.estartup, preplanning, planning, implementation, post implementation etc.
3. Prepare and submit training reports
4. Provide support to DPMU in organizing and facilitating various project related activities at district and GP level respectively (like coordination meeting, TOTs, workshops. Exposure visits, review meetings, working session, cross learning workshop etc.)

### B. Documentation and reporting

1. Preparation of Inception report through rapid assessment and consultation with officials in DPMU.
2. Prepare progress report as listed under deliverable and payment term category.
3. Documentation of best practices, lessons, effective practices etc. for wider dissemination.
4. Assist DPMU in data collection, data entry and analysis
5. Support each GP for disclosure of information on ground water to the community
6. Providing support for monitoring:
7. Support for establishing community monitoring mechanism and reporting system
8. Track physical and financial progress
9. Monitor progress, process and performance against each DLIs
10. Assist DPMU/ SPMU in monitoring work.

### C. Providing assistance in financial and admin management

1. Prepare annual action plan and budget for GPs.
2. Provide support to DPMU / SPMU in audits. (Internal and external audits.)

# D. Brief history of DIP Organization:

Manav Rachna International Institute of Research and Studies (MRIIRS, Formerly MRIU), Deemed -to-be-University under section 3 of the UGC Act, 1956 is a continuum of excellence from the Career Institute of Technology and Management (CITM). It offers AICTE approved courses and has been ranked among the Top Educational Institutions of the country in the prestigious 'India Rankings 2020' by NIRF, Ministry of Human Resource Development, Govt. of India. UGC has granted 12 B status to MRIIRS in affirmation to its strong focus in research and Development and has been ranked in Band A under Private or Self-Financed Universities

category in the 'Atal Ranking of Institutions on Innovation Achievements' released in 2020 by the Ministry of Education, GoI.

MRIIRS has established **Centre for Advance Water Technology and Management** (CAWTM) in the year 2017 as Center for Excellence and is an outcome of several research projects which were undertaken by the university in the domain of environment and water. The researchers of the university have been consistently working for local administration and municipal corporation, Faridabad on issues such as capacity building of their officials, storm water management, artificial recharge, pond revival, etc. the diversity of MRIIRS fuels faculty members and researchers to undertake research problems pertaining to various domains with focus on environmental issues.

CAWTM works with the vision of ***"Clean water for all and forever".***Thecenter has proven its capabilities to deal with issues of water including source finding, regime monitoring, quality, water use efficiency, conservation, protection and governance, management of water etc. Apart from this, CAWTM is associated with various experts either on an individual level or institutional level, which has created a platform to provide complete solution to stakeholders. In line with its vision and mission, the Founder Chairman of CAWTM, Late D K Chadha, Former Chairman CGWB, GoI, used to say, *"SadaSabkeLiyeShudh Jal"*, and that is the legacy of the center.

With an experience of 24 years to his credit, Prof. A. Mukherjee, formerly a scientist at Central Ground Water Board is currently the Director of CAWTM, MRIIRS. Under his leadership the center desires to get associated with ABY Haryana Project. The center has professionals from the field of Engineering, Geology, Hydrogeology, Biotechnology, Architecture, environment Management, and Geo-technology. Professionals at CAWTM aspire to take up the national challenges in the identified areas of water shortage, quality degradation, deprivation of rural poor from the basic need of good quality drinking water and other environmental issues. Global Climate Change, Carbon Dioxide sequestration in geological formations, Earthquake Precursor Studies, Phytoremediation etc. are the R&D activities in which the center is engaged. We are also eager to pool in best talents available globally for providing techno economic & socio fabric solutions on such issues.

MRIIRS is glade to have the opportunity to work as District Implementation Partner (DIP) for successful completion of Atal BhujalYojna in the State of Haryana, for we feel that with our experience and expertise we are capable of doing complete justice to the scheme of Haryana-Our State of Residence.

## E. Institutional set up of DIP Team:

Manav Rachna International Institute of Research &Studies, Centre for Advance Water Technology and Management is coordinating the works of Atal BhujalYojna as DIP. Manav Rachna's institutional set up includes over-arching leadership of Dr. N. C Wadhwa, IAS (Retired), Director General, MREI, and Dr. Dipankar Saha, Chair Professor, CAWTM, MRIIRS.

Director, CAWTM, MRIIRS, Dr. Arunangshu Mukherjee, Professor & Head, Department of ES&E, is Project In-Charge Atal BhujalYojna and Ms. Sneha Rai, Assistant Professor, is team coordinator. The following field level officers are engaged under Cluster 7. ( Table 1.2) Apart from this, office support staff at CAWTM, Finance Department of University, Office of the Vice Chancellor and Office of Registrar is involved in managing the show in day-to-day basis.

**Table 1.2** Details of DIP Field Staff of Cluster 7, District Palwal, Haryana

| S. No | Name | Designation | Email | Phone No. |
|---|---|---|---|---|
| **1.** | Amit Kumar | Hydrogeologist | amitrajgeologist@gmail.com | 6395004498 |
| **2.** | Akash Kumar | Hydrogeologist | kanhaiyaakash@gmail.com | 9835094561 |
| **3.** | Rahul Mehlawat | Water Conservation specialist | rahulmehlawat007@gmail.com | 9654913660 |
| **4.** | Manohar Lal | Agriculture specialist | dip.palwal.hry@gmail.com | 7988596289 |
| **5.** | Ashok Kumar | IEC Expert | ashokkumar21596@gmail.com | 9306831443 |
| **6.** | Govind Madhav | IEC Expert | govindmadhav963@gmail.com | 9319636163 |
| **7.** | Mahesh Kumar | IEC Expert | maheshkumar01212@gmail.com | 8053701428 |
| **8.** | Abhishek Chaudhary | IEC Expert | dip.palwal.hry@gmail.com | 9760887521 |
| **9.** | Jatin Kumar | IEC Expert | jatinrewaria113@gmail.com | 9050119113 |
| | | | | |

# 2. DISTRICT WISE GROUND WATER PROFILING

## Palwal District:

Palwal district is located in the South Eastern part of the Haryana state lies between latitude 27◦50′ to 28◦15′N and longitude 77◦05′ to 77◦33′E and falls under survey of India sheet number 53H/3,4,7,8,9and 54 E/9 largely. Total geographical area is 1364.55 kms. Total185Gram Panchayat of four blocks of Palwal District is included under Cluster 7.

### A. GEOMORPHOLOGY:

Geomorphologically the area comes under Yamuna sub-basin of Ganga basin. The district is bounded by river Yamuna in west and Ferozpurjhalka distributary in the east. The altitude of the district varies from 185 metres to 205 metres. The district is having two distinct geomorphological unit, first is the residual hills of Aravalli and second is Yamuna Alluvial plains. The Yamuna Alluvial plains can be further sub-divided into Active flood-plain and Alluvial plain(Fig 2.1). A small portion of the district is covered by desert sand dunes. Topography of the district is undulated plain having linear ridges of quartzite running NS to NNE-SSW direction. The general slope of the area is NW to SE, West to East. Main Agra canal in Palwal block, Utawar distributary and main Gurgaon canal in Hathin block, Gochi drain in Palwal and Hathin block, Hodal distributary in Hodal block, Hassanpur distributary in Hassanpurblockcarry the water from Okhla barrage. ( GSI : Saini et al. 2016 and Aquifer Mapping Report of NCR, CGWB Aug 2015)

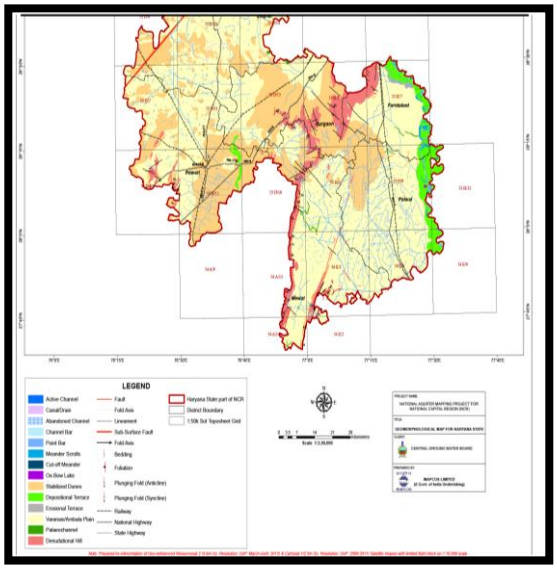



Fig 2.1 Geomorphology Map of Faridabad Palwal and Rewari district (Source CGWB 2015)

### B. WATER RESOURCE PROFILE- SURFACE, GROUND WATER, RAINFALL AND TRADITIONAL SOURCE:

The district Palwal is partly water stressed district. The climate of the Palwal district can be classified to tropical to semi-arid to hot which can mainly be characterized by extreme

dryness of the air except during monsoon months June to September. South-west Monsoon prevails in the district. The average annual rainfall is around 542 mm spread over 27 days. Normal monsoon constitutes about 85% of the rainfall (about 460 mm) and remaining 15% rainfall occurs during non-monsoon months. (CGWB District Report 2013) Rainfall is the principal source of water in the district. The surface water exists in the form of perennial river Yamuna and canal water and pond water in the district(Fig 2.2). The canal flows in the district emergedfrom Okhla Barrage and divided into Agra canal and Gurgaon canal within the district. The shallower water lever varies from 10-20 metres whereas the deeper level goes down to 70-90 metres. Traditional source of water in the district are canal water, ground water and rainfall.

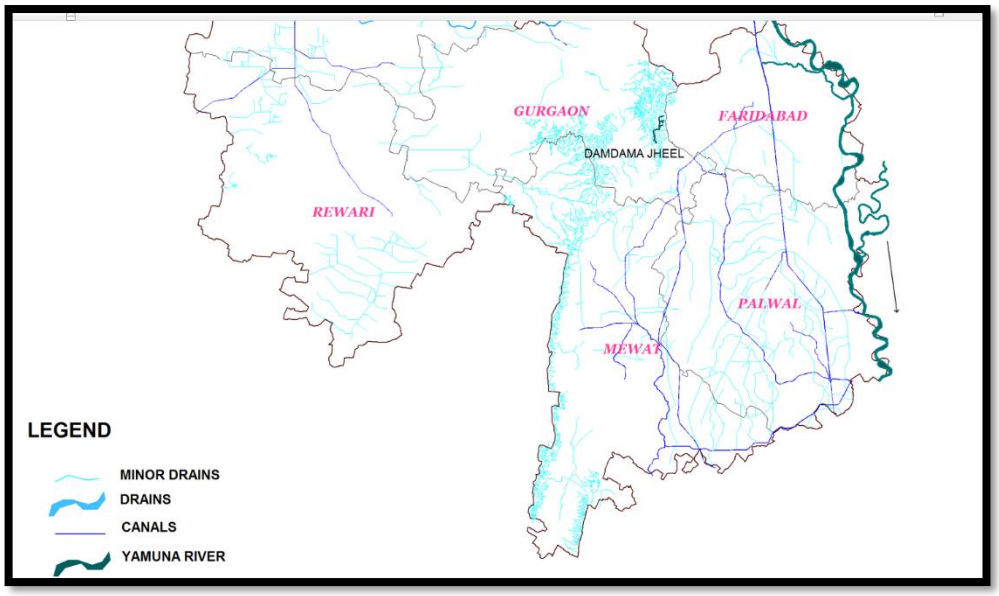



Fig 2.2 Drainage Map of Faridabad Palwal and Rewari district (Source: CGWB 2015)

**Table 2.1: Seasonal and Annual Rainfall - Haryana State (in mm):-**

| RAINFALL SEASON | NORMAL R/F (mm) | ACTUAL RF (mm) - 2019 | ACTUAL RF (mm) - 2020 | % DEPARTURE 2019 | % DEPARTURE 2020 |
|---|---|---|---|---|---|
| WINTER | 35.94 | 38.28 | 35.49 | 7% | -1% |
| PRE-MONSOON | 36.00 | 38.49 | 116.26 | 7% | 223% |
| SW MONSOON | 511.00 | 289.18 | 316.57 | -43% | -38% |
| POST-MONSOON | 31.61 | 34.06 | 11.80 | 8% | -63% |
| ANNUAL | 614.55 | 400.01 | 480.12 | -35% | -22% |

## C. HYDROGEOLOGY:

HydrogeologicallyPalwal District can be divided into hard rock and soft rock terrain. The hard rock terrain constitutes Delhi Supergroup of rocks mainly quartzite represented by

Ajabgarh group of Late to middle Proterozoic age. The Ajabgarh group of rock comprises mainly hard and massive bedded quartzite in the form of small inlier within alluvial terrain. These rocks are exposed as conspicuous ridges running roughly North-South in the direction. The beds are steeply dipping between 50-80 degrees. Quaternary alluvium unconformably overlies Delhi Supergroup of rocks as 30-140 m thick over-burdened of loose unconsolidated sediments. On the basis of typical lithology, stratigraphic position and continuity with the established sequence of Ganga basin the alluvium can be classified into Older and Newer Alluvium. This sequence comprises horizontal beds and lenses of brown to yellowish clayey silt, brown and grey sand and calcrete having lateral facies variation. The newer alluvium disconformably overlies older alluvium. A generalized lithostratigraphic succession is given below.

**Table 2.2:** Generalized Geology and Geomorphology of the district (Source- CGWB,2019)

| Group | Age | Geological units | Geomorphological units |
|---|---|---|---|
| Quaternary | Holocene | Newer Alluvium Disconformity | Low land unit |
| | Pleistocene | Older Alluvium Unconformity | Up land unit |
| Pre Cambrian | Proterozoic | Delhi Super - group- Quartzites | Denudational/ Residual hill unit |

At places, the lower part of hard and fractured rock forms semi confined aquifer which remain in partial hydraulic connectivity with phreatic aquifer. Groundwater level in thehard rock varies from 10-70 metres in depth.

The alluvial rock also forms phreatic aquifer for upper 60 metres and many a time produce semi confined to confined condition due to presence of clay horizon forming Aquitard and aquiclude. Patchy occurrence of wind-blown sand forms local phreatic aquifer. At places, perched aquifers of very local extent hanging on regional aquifer has been observed. Groundwater level in alluvial aquifer varies from water-logged condition to deep as 40-50 metres.

**Ground Water Conditions**

The ground water occurs in unconfined conditions in alluvium as well as in weathered and jointed quartzites. In alluvium, sand of various grades from the potential aquifer zones. In quartzites, it occurs in the weathered zones and inter spaces within interconnected joints and fractures. Central ground water Board has drilled 21 exploratory well to delineate the potential aquifer zones, evaluation of aquifer characteristics. Out of these 21 exploratory wells, 13 were abandoned due to poor quality of groundwater. The permeable groundwater zone comprises fine to medium grained sand and occasionally coarse sand and gravel. Their lateral as well as vertical extent is limited. Borehole data reveals that clays are more than sand fraction in the district. Groundwater occurs in alluvium and in underlying weathered and fractured hard rock aquifer. In alluvium, granular zones are evenly distributed and is more than 350 metres in the eastern part near river Yamuna.

The discharge of the well ranges from 750-900 lpm for a drawdown of 5-7metres. The transmissivity value ranges from 55-200 metre-sq./day. The shallow tube well for irrigation use are generally constructed down to a depth of 40 metres with a discharge range of 360-600 lpm.

**Depth To Water Level**

The depth to water level in the area varies between 2-11mbgl during pre-monsoon and 2-10mbgl during post-monsoon. The water level trend during pre-monsoon indicates average fall of 0.2 m/year.

**Water Table Elevation**

The elevation of water table in the district varies 213-290 amsl. The average gradient of the water table is of the order of 1metre /km. The overall flow of groundwater is from North to South in direction.

**Aquifer Geometry**

Based on the available data and lithological logs, a fence diagram has been prepared to define aquifer geometry.The study suggests that:

(i) The total thickness of unconfined aquifer is limited to about 45 m

(ii) The depth to bed rock in the west as deciphered from the drilling data is within 200 m bgl while in the east near the river Yamuna it is more than 350 m bgl.

## D. GROUNDWATER RESOURCES:

Based on groundwater resource estimation, Palwal district has been categorized under over-exploited category. Groundwater recharge area of the district comprises 127784 hectares out of total 136455 hectare. Total Groundwater recharge for the district thus comes to 51248 hectare-metre entirely falls under command area thus forms the annual groundwater recharge. 5124 hectare-metre has been considered as environmental flow which forms about 10%. Annual groundwater extraction is 47094 hectare-metre out of which 2211 hectare-metre is of poor quality thus forming stage of ground water extraction 102%. Only -1465 hectare-metre has been kept for allocation under future domestic utilization (CGWB, 2013).

Analysis of the historical ground water resource data clearly demonstrate the changing stage of ground water extraction. All the blocks are showing gradual shifting from safe/semi-critical to critical except Palwal block which is traditionally over-exploited for last 15 years. Further, Palwal district is having a water-logged area of 2463 hectares.

Trend of groundwater level of the four blocks of Palwal district ( Table 2.3 and 2.4) show significant decline in both pre-monsoon and post-monsoon season. (CGWB, 2013)

**Table 2.3 Pre-monsoon and post-monsoon trend of Groundwater level of four blocks of Palwal district**

| | TREND OF GROUNDWATER LEVEL (cm/year) | |
|---|---|---|
| **BLOCK** | **Pre- Monsoon** | **Post-monsoon** |
| HASSANPUR | -28.5 | -48 |
| PALWAL | -34.5 | -51 |
| HATHIN | -58.5 | -18.35 |
| HODAL | -7.2 | -16.9 |

**Palwal district:**

| | |
|---|---|
| Total geographical area (ha) | 136455 |
| Command area (ha) | 127784 |
| Non-command area (ha) | 8679 |
| Poor ground water quality area (ha) | 8703 |
| Hilly area (ha) | 129 |

**Table 2.4 Unit draft for irrigation, domestic and industrial of four blocks of Palwal district for pre and post monsoon**

| Unit draft | Unit draft for irrigation | | Unit draft for domestic | | Unit draft forindustry | |
|---|---|---|---|---|---|---|
| **Block** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| **PALWAL** | 0.8145 | 0.9955 | 0.5973 | 1.2127 | 0.5973 | 1.2127 |
| **HATHIN** | 0.6435 | 0.7865 | 0.5973 | 1.2127 | 0.5973 | 1.2127 |
| **HODAL** | 0.6795 | 0.8305 | 0.5973 | 1.2127 | 0.5973 | 1.2127 |
| **HASSANPUR** | 0.462 | 1.078 | 0.5973 | 1.2127 | 0.5973 | 1.2127 |

(**Source:** Report of Dynamic groundwater resource of Haryana state, Groundwater estimation March, 2013, published in 2016 CGWB)

## E. GROUNDWATER QUALITY:

The shallow Groundwater in the district is alkaline in nature where pH varies from 7.98-9.25 and is moderately to highly saline where EC varies from 1093-9809 micro siemens/cm. Chlorideis the predominant anion along with patches of sulphate and nitrate. Sodium is the dominant cation followed by Potassium. However, at some places mixed cationic character has been observed. 89% sample analysed from the district were found not suitable for drinking purpose mainly due to higher fluoride and salinity problem (CGWB Handbook 2014-15) .SAR and residual sodium carbonate vary from 3.9-20.5 and -56-13 milli-equivalent respectively (Table 2.5). US Salinity diagram classification of irrigation water indicated that sample falls under classes C2S1, C3S1, C3S4, C4S2, C4S3 & C4S4. These waters are not suitable for customary irrigation as they may cause salinity and sodium hazards. It would be better if such waters are used for semi-salt tolerant to salt-tolerant crop along with appropriate amount of gypsum on the well-drained soil. Groundwater is mostly sodium bicarbonate or sodium chloride type. (Source: District Ground water Board, CGWB Handbook, 2014-15, Palwal District, Haryana)

**Table:2.5 Statistical Details of the Chemical Analysis of the Parameters**
(CGWB Handbook 2014-15)

| | Max | Min |
|---|---|---|
| | (10 samples) | |
| **pH** | 9.25 | 7.98 |
| **EC**(µs/cm) | 9809 | 1093 |
| **CO3**(mg/l) | 178 | Nill |

| | | |
|---|---|---|
| **$HCO_3$** (mg/l) | 792 | 107 |
| **Cl**(mg/l) | 2498 | 101 |
| **SO4**(mg/l) | 1265 | 50 |
| **NO3**(mg/l) | 781 | 1.3 |
| **Ca**(mg/l) | 433 | 10 |
| **Mg**(mg/l) | 47 | 16 |
| **Na**(mg/l) | 1252 | 133 |
| **K**(mg/l) | 1520 | 2.5 |
| **TH**(mg/l) | 2920 | 92 |
| **F**(mg/l) | 4.79 | 0.46 |

## F. STATUS OF GROUND WATER DEVELOPMENT:

Analysis of the historical ground water resource data clearly demonstrate the changing stage of ground water extraction. All the blocks are showing( Table 2.7) gradual shifting from safe/semi-critical to critical except Palwal block which is traditionally over-exploited for last 15 years. Palwal &Hodal block havebeen categorized as semi-critical, Hassanpur comes under critical stage and Hathin block is showing safe stage of groundwater development (Source: CGWB 2019)

**Table 2.7 Changing Stage of Groundwater Extraction of district Palwal(Source: CGWB)**

| Name | 2011 | 2013 |
|---|---|---|
| Palwal block (%) | **113** | **118** |
| Hathin block (%) | 89 | 85 |
| Hodalblock (%) | 103 | 95 |
| Hassanpur block (%) | 103 | 94 |
| **PalwalDistrict**(%) | **102** | |

## G. SECTORAL UTILITY SCENARIO:

Annual ground water extraction for the four blocks of Palwalvaries from 6359hectare-metres for Hassanpur block whereas same for Palwal block is 22209 hectare-metres. Total irrigation draft for the district has (source: CGWB Resource estimation 2019-2020, www.ingres.iith.ac.in). Trend of groundwater level in the district shows significant decline in both pre-monsoon and post-monsoon season**.** For the four blocks, it ranges from -7.2 to -58.5 cm/year and -16.9 to -51 cm/year in pre and post monsoon respectively.(Source: CGWB March 2013)

**Table 2.9 Annual Groundwater extraction and Irrigation draft of the four blocks of Palwal**

| Block | Annual Groundwater extraction (hectare-metre) | Irrigation draft(hectare-metre) |
|---|---|---|
| **HASSANPUR** | 6359 | 6178 |
| **HATHIN** | 8829 | 8636 |
| **HODAL** | 9697 | 9418 |
| **PALWAL** | 22209 | 21863 |

**District**

## H. TREND IN UTILITY AND RESOURCE DEVELOPMENT:

It has been observed that groundwater utility in the district is increasing day by day.
For the four blocks, it ranges from -7.2 to -58.5 cm/year and -16.9 to -51 cm/year in pre and post monsoon respectively. All the blocks are showing gradual shifting from safe/semi-critical to critical except Palwal block which is traditionally over-exploited for last 15 years.

## I. KEY MANAGEMENT CHALLENGES:

Detailed investigation regarding ground water scenario in the district clearly indicate this district is having ground water over-extraction in both the blocks. This has adversely impacted the environment. Non monsoonal flow to surface water streams/ponds has ceased or reduced drastically. As a result, many of the perennial streams became

seasonal. Large number of springs has gone dry or remained as seasonal only. The key management challenges have been listed below:

a. Declining water level trend
b. Increasing stage of groundwater over-extraction
c. Increasing ground water salinity
d. Enhanced production of grey water and its mismanagement
e. Rapid increase in population density
f. Increase in trend of urbanization/industrialization
g. Inter sectoral conflict of resource allocation

## J. PROSPECTIVE WATER MANAGEMENT APPROACH:

To mitigate with declining ground water level trend and restrict the rapidly increasing stage of ground water development in the district, demand site and supply site management need to be initiated at GP level. For the effectiveness of demand site and supply site management participatory approach needs to be followed. Water use efficiency can be key to demand site management approach. Apart from improved technical interventions, behavioural change of groundwater stake holders needs to be implemented. Institutional strengthening and capacity building at grass root level has to be initiated immediately. Convergence of various government schemes is need of the hour, for example, under MGNREGA 70% of the fund utilization has been allocated for improvement of water related infrastructure. This needs to be drop tail with Atal BhujalYojna for effective management of supply site interventions. Similarly, government schemes like 'MeraPaaniMeriViraasat' and MICADA need to be drop tail for demand site interventions. For restricting the increase of poor ground water quality, Rainwater harvesting and Artificial recharge at micro-watershed level need to be increased. This not only improve the groundwater quality but also able to arrest declining water level trend. Water use efficiency can be solution to increasing urbanization/ industrialization and increasing sectoral conflict of water.

# 3.DISTRICT LIVELIHOOD SCENARIO

## PALWAL DISTRICT:

### A. SECTORAL DEPENDENCY OF VARIOUS FORMS OF LIVELIHOOD:

The Faridabad district based on Census has been divided into urban and rural sectors. The total workers as per Census 2011 in the district exist 309563 out of which 67335 urban and 24228 rural. The main workers in urban sector are 52865 and in rural 164067 whereas total cultivators in the district are 71540 largely are from rural area except 2903 urban cultivators. Apart from this, there are total 26229 agricultural labour largely are from rural sector (23684) whereas household industry workers in the district are 5616 out of this 2268 are from urban sector. Total other workers in the district were found 113547 which includes 68398 from rural and 45149 from urban. Women and men have access to work through MNREGA which grantees them with 100 days of work in year with minimum wages

### B. TEMPORAL TREND IN LIVELIHOOD FORM:

Total Cultivators are 4% and total agricultural labour are 23%. Household Industrial worker around 2%, 36% are other workers. Therefore, the trend in the district is doing other work than agriculture (Source: Census 2011, District Hand book- Faridabad, Series 7, Part B Haryana). The Work Participation Rate of Palwal district is 29.7 per cent
in comparison to 35.2 per cent of the State. The Work Participation Rate of Males in Palwal is 43.5 per cent, whereas the Female work Participation Rate is 13.9 percent. The percentage of Cultivators to Total Workers in 2011 in the district is 29.6 per cent whereas during 2001 it was 42.6 per cent. Similarly, the percentage of Agricultural labourers to Total Workers in 2011 in the district is 19.6 percent whereas during 2001 it was 18.7 per cent.It clearly indicates their large migration from cultivator to other work group including minor shift towards agricultural labour.

# 4.WATER SECURITY PLAN: APPROACH AND METHOD

## A. INSTITUTIONAL FLOW FOR PREPARATION OF WSP

Manav Rachna International Institute of Research and Studies has been engaged as DIP for Cluster 6 which includes District Faridabad and Rewari where two community development block Faridabad and Ballabgarh of Faridabad District and Khol block of Rewari exist, Total 111 Gram Panchayat are included under Atal BhujalYojna in the district. The preparation of Water security Plan commences with secondary data collection for all the 111 Gram Panchayat. Immediately after engagement of MRIIRS as DIP, MRIIRS has appointed core field staff for the district which includes two Hydrogeologists, one each water conservation specialist and agricultural specialist and 3 IEC Experts, apart from community level worker at village level. The engaged core staff were first trained about the aim and objective of Atal BhujalYojna and were oriented towards their specific role under ABY. After induction level training the field staff were posted in the field first for collection of secondary data to prepare village profile and preparation of GP wise baseline data required for preparation of Water Security Plan. Subsequently capacity building of the field staff about the district wise ground water profiling and livelihood scenario were done so that all the core staff are able to understand their role in preparation of WSP. The core staff were also trained to operate the MIS System and groundwater app necessary for preparation of Water Security Plan. Adequately trained and oriented field staff were engaged in preparation of WSP. The steps involved in preparation of WSP is given below.

## B. METHODOLOGY FOR PREPARATION OF WSP

For planning of preparation of WSP, meeting with DPMU has to be done where cluster of Gram Panchayat were selected for preparation of WSP based on the overall target for the district per month. As per the selected GP field party visits to the village and first meeting one is arranged with village level Water & Sanitation Committee. During this meeting, VWSC members are engaged to introduce with the aim and objective of ABY and the role of VWSC member in formulation and implementation of WSP. During the second meeting, PRA participatory rural Appraisal and transit walk are been organized at the same time social monitoring and profiling about the GP is made. During the third meeting, key water related issues are discussed and following the bottom-up approach possible solutions were listed for both supply site and demand site management. During the fourth meeting, Jal Panchayat is organized where resolution is passed for various proposed intervention involving the Gram-Sabha. Half to 3/4$^{th}$ members of VWSC must be present during this Jal Panchayat. During the organization of all the four meetings it is mandatory to maintain gender equity involving social equity. All the Minutes of the meetings are to be prepared and uploaded in the MIS System and on Atal Bhujal App. For

preparation of each WSP under MIS, credentials are to be generated with the help of SPMU and these unique credentials are to be maintained for each village for entire duration of the project.

## C. DATA GATHERING TOOLS

Various tools are in use for data gathering for preparation of WSP. This includes water level measuring tapes, in situ water quality analysis kit, rain gauging stations, automatic water level recorder fitted in GP based purpose-built piezometer. The groundwater app is to be used for georeferencing of all water abstraction structure and water conservation structures. Environmental and social safeguards tool include Environmental safeguards and screening tool, Construction environment monitoring tool, Environmental Mitigation measures tool, Recharge water quality monitoring tool and Treated wastewater Monitoring tool.

## D. PROCESS FLOW AND PROTOCOLS

The MIS is used for preparation of WSP following the process and protocol included under following modules:

1. **Gram panchayat data collection information**

This module includes four chapters GP profile, field data collection, secondary data collection and social monitoring.

2. **Water Security plan**

This module includes six chapters gram panchayat, water availability, water utilization, balance, water budget and Water security plan.

3. **Social management**

This module includes details of members of VWSC Committee, DIP agency, other local institutions, Program beneficiaries, Community Participation and Capacity building and training.

4. **Environmental and social safeguards tool**

This module includes Environmental safeguards and screening tool, Construction environment monitoring tool, Environmental Mitigation measures tool, Recharge water quality monitoring tool and Treated wastewater Monitoring tool.

## STEPS INVOLVED IN WSP PREPARATION

**1.Obtaining GP list from SPMP,** collection of secondary data to prepare village profile and preparation of GP wise baseline data

**2.Credentials generation for each GP for MIS and Mobile App ,**

**3. Mapping of VWSC and its members**

**4. Meeting 1-Orientation on Atal Jal,**

**5. Budget-Meeting 2 with VWSC & community on Water Balance- Water Availability, Water Utilization, Balance-Budget,**

**6. GPDCI Module Filled,**

**7. Water Meeting 3 for (DDP)Demand Decrease Plan & (SIP) Supply Increase Plan], Transect Walk to sites suggested for Supply Increase Plan, Collection of Details of Proposed Demand & Supply Side Interventions along with preparation of Activity sheet,**

**8. Well Inventory, Geo-tagging of Ground Water Monitoring Well, Geo-tagging of Artificial Recharge/Water Conservation Structures,**

**9.Declaration of Source of Data in MIS portal,**

**10.Sharing of Draft WSP with DPMU,**

**11. Meeting 4 - GP level meeting for WSP Approval,**

**12.Data entry in MIS,**

**13. Preparation of GIS maps**

**14. WSP vetted by DPMU, and Comments/observations obtained),**

**15. Data correction in MIS as per DPMU suggestions,**

**16. WSP Approved at GP Level and Resolution passed,**

**17.WSP vetted by DPMU (with Declaration),**

**18. ESS tool uploaded in the MIS,**

**19. Social Management Module filled**

**20. Approved WSP uploaded in the MIS**

**,**

## E. SCOPE OF SCHEME INCORPORATION

The scheme provides scope of incorporation and convergence with various schemes of Central and State government as MGNREGA, Merapaani Meriviraasat, , Soil and water conservation etc. for drop tailing and implementation under Atal BhujalYojna. The MGNEREGA and Soil and Water Conservation etc can be utilized for Supply side intervention, whereas the Merapaani Meriviraasat etc are useful for Demand side intervention. Apart from these WSP can incorporate works of the Haryana Pond and Waste Water Management Authority, Forest Department, Rural Development Department, Department of Agriculture, HAREDA, Horticultor, PHED, IWRD etc.

## F. SCOPE OF INSTITUTIONAL INCORPORATION INCLUDING VILLAGE LEVEL TRADITIONAL INSTITUTION

SPMU and DPMU has been constituted at state and district level to coordinate in preparation of GP level WSP and implementation of Atal Bhujal Yojana. IWRD is the nodal Agency at state level and respective district level offices of IWRD are the nodal office at district level. TSA, DIP and DPMU support staff has to facilitate the preparation of GP wise WSP and its implementation. At district level under the chairmanship of the DC DPMU-DIP has to function. All the line department has to support in data generation and in implementation of the DDP and SIP through convergence. For Capacity building and strengthening of institutions and behavioural change of stakeholders the IEC and media team of various departments are to be included. The Panchayti Raj institution at grass root level having significance in

preparation of WSP. Village level institutions like Jal Viraadri/Jal Panchayat/ village Water & sanitation Committee(VWSC) etc. have to play a significant role in planning, implementation and execution of WSP. Village level talent has to be nurtured for sustainability and operational maintenance of infrastructure/ assetes created for water security of gram panchayat level.

## G. STRATEGY FOR WSP IMPLEMENTATION

Atal BhujalYojna has planned such a way that the various schemes of local state level and central level need to be converged for creation of assets and proper implementation of supply site and demand site management proposed under WSP (Table 4.1). For getting the benefits of convergence, behavioural change to promote judicious use of ground water resources, source sustainability for intervention and improved ground water sustainability needs to be targeted.

**Table 4.1 PLAN OF ACTION FOR WSPs UNDER ATAL BHUJAL YOJANA, HARYANA**

| Sl.No | Activity | Course of Action | Remarks |
|---|---|---|---|
| 1 | **Field level data collection** | | |
| a | Short meeting with Sarpanch | Organise a short meeting with sarpanch, orient him about ATAL JAL and tell him about his support required for WSP preparation. | |
| b | Hamlet level Meeting with Community | Organise Hamlet level meeting with 10 to 15 Participants with the support of Sarpanch, Discuss about Atal Jal and take the plan of Demand side plan(Drip Sprinkler, crop diversification and UGPL) and Supply side intervention (Recharge pit, Soak Pit, Johad cleaning/ Johad Renovation, Root top rain water harvesting). | In hamlet level meeting major focus should be on Demand Side intervention Plan (Drip Sprinkler, crop diversification and UGPL) and Supply side intervention (Recharge pit, Soak Pit, Johad cleaning/ Joohad Renovation, Root top rain water harvesting). collect the detail like - Beneficiary name, proposed activity and area for proposed intervention |
| c | Field data | Well inventory data (Atleast 10 wells). | Geotagg only 15 wells. Take aal thee required information in hard copy (use well inventory format). In case Mobile App is not working take the photograph with he phone camera and collect the information in hard copy( use well inventory format) |

| | | | |
|---|---|---|---|
| | | Geo-tag the same 10 wells for Ground water monitoring | take 10 wells from 15 tagged wells for well inventory. In case Mobile App is not working take the photograph with he phone camera and collect the information in hard copy( use GWM format) |
| | | Geotag all thee Artificial recharge structures at Village level. | Collect the information in hard copy also (Length, breadth, Depth,lat,Long etc. |
| 2 **Secondary data collection** | | | |
| a | Demographics data | Collect all the population data (Total, Male, Female, Category wise population(ST,SC,OBC,GEN,APL, BPL) from Gram Sachiv only. | Letter to Sachiv and Sarpanch for coordination and support will be sent from DC |
| b | Land Use Land Cover Data | Collect all the information like- Total GP area, Forest area, Fallow land, Cultivable land, Net Sown Area From block Agriculture officer. | Letter to Block agriculture officer for providing data and information will be sent from DC. |
| c | Irrigation data | Area under irrigation in Kharif, Rabi and Summer season, total unirrigated area and Gross cropped area, collect all the data from Block Agriculture officer. | |
| d | Irrigation type (Area in Hectare) | Collect data on how much area irrigated from Canal, tanks, dugwell and Borewell, from Block agriculture officer | |
| e | No of existing well | Collect the data on existing well (total no of Dugwell, borewell, tubewell, dugwell cum borewell, from Block agriculture officer | |
| f | Water Lifting Sources | Collect thee data for Existing lifting sources at GP like- Electric Pump, Diesel Pump, centrifugal pump, submersible pump, solar pump etc from block agriculture officer. | |

## H. CONVERGENCE STRATEGY OF THE SCHEMES

It has been identified that four type of convergence are possible including Financial, Institutional, Technical and Social Mobilization. The objective of these convergence is Targeted to sustainable ground water management mainly through convergence among various ongoing schemes with the active participation of local communities and Stakeholders. For convergence of state and central schemes with Atal BhujalYojna (Fig 4.1) institutional strengthening and capacity building at various level has to be adopted. Meeting and workshop for financial infrastructure and human Resource Convergence are key for successful convergence. Seamless interaction between

NPMU, SPMU, DPMU and DIP under the overall guidance of Advisory council are key to the success of convergence.

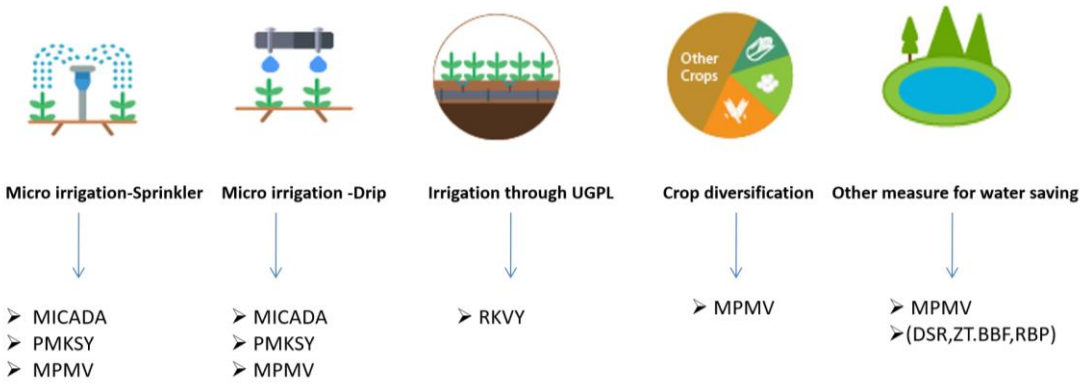



Fig 4.1 Supply side and Demand side intervention and possible convergence with schemes

## I. SCOPE AND PLAN FOR ADAPTATION OF WATER EFFICIENT PRACTICES

Various success stories portrayed throughout the country for water conservation and water efficient use, and behavioural change has to be identified in context with Haryana. The water efficient practice need to be adopted to reduce the sectoral demand of water. Since over 80% of water is being consumed for irrigation thus water efficient irrigation practice has the potential to reduce the demand substantially. Re-cycling and reuse of water also improve the water efficiency. In Haryana scope of micro irrigation and grey water management can be adopted successfully.

## J. WORK PLAN FOR PREPARATION AND IMPLEMENTATION

For successful conductance of role of DIP, the entire work has to be divided into 6 parts which includes GP level water balance and water budgeting plan for preparation of WSP, capacity building and training of stakeholder and local and district level institutions, meeting/workshop/mass awareness involving stakeholders and officials, strengthening of GP level institutions, development of participatory Groundwater management system, preparation and submission of report. All the 6 steps are further sub-divided into various steps as given below( Fig 4.2)

| ATAL BHUJAL YOJNA- HARYANA | | | | | | |
|---|---|---|---|---|---|---|
| Sno | TASK | SUSTAINABLE MANAGEMENT OF GROUNDWATER | | | | |
| 1 | GP level WSPs & Water Budgeting | Data collection | Formulation of WSP | Annual approval of WSPs | Recommendations | Implimentations |
| 2 | Capasity Building/ Training | Stakeholder level ( Monthly) | GP level (Quaterly) | Block level ( Annualy) | District level ( Annualy) | |
| 3 | Meeting /Workshop/ Mass awarness | Stakeholder level (Monthly) | GP level (Bi-monthly) | Block level (Six monthly) | DPMU level ( Annualy) | SPMU level ( Annualy) |
| 4 | Strengthening of GP level Institutions | Develop Village Information Center - 399 numbers | Preparation of Annual action Plan and Budget for GP and assistance in Audit | Preparation of district spacific communication BCC plan | Buil the capacity of VWSC,CBO, Village Govt Officials, telent hunt | Site selection for Monitoring Network Establishment |
| 5 | Development Participatory GW Management System | Awarness through mobile van at 399 GP level | IEC tool kit for facilitate efficent use of water | Preparation of App to reaching all HHs for active participation | Establish community monitoring mechanism at GP level | |
| 6 | Report Submission | Inception Report (1) | Report on Public disclouser of information on GW (4) | Quaterly progress reports (16) | Reports on WSPs (4) | Final Report (1) |
| | | Preperation of village profile with base line data all 399 GP | Training reports of all training conducted | Documentation of best practices, lessons, effective practices | | |

Fig 4.2 Plan of execution

## K. GP WISE BASELINE

GP Wise baseline data of 111GPfor cluster-6 is annexed in Annexure -1.

**(Attached in Annexure I)**

## L. Comprehensive management plan

### a. Community management practices:

Community management is need to connect with relevant communities, build relationship and create value for the members of the community. Community managers are on the frontlines helping retain existing customers and search new ones. Community management actively facilitate conversions willing to go wherever the conversion is happening or driving conversion or engagement. Thus, community management involves creation for social media content. Community manager needs to find out the community members define what success is, monitor the right channels, create and ask interesting questions to engage the community, respond to relevant conversations, develop consistent engagement drivers and keep an eye on completion. Community management tool includes social media soft wares like sprout social, hoot suite, mention etc. community management is critical to success of Atal BhujalYojna. Community managers are the tone voice and human element behind the Atal BhujalYojna.

Community management allow to:

- Obtain feedback and gather idea from stakeholders through real time conversation
- Provide support to audience/stakeholders when they need it
- Increase the awareness among the stakeholders about Atal BhujalYojna
- Learn about the stakeholders and what they want, expect and need in terms of content, product, services and support
- Build one-on-one and one-to-many relationships between community member and Atal BhujalYojna
- Boost interaction and conversation
- Provide value to stakeholders beyond the product and service

Manav Rachna International Institute of Research and Studies has engaged radio Manav Rachna (FM 107.8) as a social media channel for community management for the district Faridabad.

The IEC expert of DPMU, and IEC Experts of DIP are engaged in community management for which they are preparing and displaying banners and posters. Distributing booklets, reporting activities on local newspapers, organizing meetings and capacity building sessions, doing transit walk involving communities within the gram panchayat. Few of the practices are displayed in the attached pictures.

## b. Institutional management practices:

To support the comprehensive management plan of Atal BhujalYojna in the district Faridabad, various institutional arrangements were made involving Panchayati Raj institution, District level administration and state and national level organizations. Under Panchayati Raj institution, office of Sarpanch and Panchayat Secretary were approached for community mobilization and organizing Gram Sabha meetings. From office of the District Administrator were approached for mobilizing the government offices required for secondary data generation and convergence. Irrigation and water resource department at Faridabad has been interested with work of Nodal Agency. DIP is working in close connection to the Nodal agency for implementing the Atal BhujalYojna in the district. For seamless data generation and implementation of Atal BhujalYojna State level and national level organizations were approached including SPMU, Haryana Water Resource Regulatory Authority.

## c. Comprehensive plan for participatory management practices:

Participatory management of groundwater resource need proper planning involving the stakeholders at GP level for which key elements are making the invisible groundwater resource visible understanding about private property to common pool property regarding groundwater supply augmentation to demand management. To manage aquifer recharge through village level interventions by preparation of water budget based holistic water management plan and pilot in different parts of the district. The timeline for various activities is given in the below GANTT Chart.

## ATAL BHUJAL YOJNA HARYANA- MONTHLY ACTIVITY CHART OF DIP -MRIIRS

| | Task under ABJYH- Monthly activity chart 1st and 2nd year | 1st Year | | | | | | | | | | | | 2nd Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q1 | | | Q2 | | | Q3 | | | Q4 | | | Q1 | | | Q2 | | | Q3 | | | Q4 | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | BIDDING | | | | | | | | | | | | | | | | | | | | | | |
| | LOA | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Establishment of Cluster Office at MRIIRS, Fbd, Appointment /Deployment of Man and Machine | | | | | | | | | | | | | | | | | | | | | | |
| | Project Inception -Introductory Meeting with DPMUs and SPMU, obtaining GP list and maps, procurement of data | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Base line data collection and delineation of watershed | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Preparation & submission of Work Plan and Inception Report | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Develop Village Profile and Village Information Center | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Mapping all village institutions like VWSC, WUA,FPO, CBO,WMC, GWMA etc and convergence of all on going Govt schemes with ABJYH, Talent hunt, events | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Budhsangoshti-Meetings /Workshop/Trainings/ Awareness campaign and Quarterly Report (QR)submission | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Community mobilization events IEC,BCC & IPC and Gramsabha | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Investigations for WSP and Water budget and Implementation | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Interventions for supply & demand side water management and water use efficiency enhancement | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Strengthening of GP institutions and committees, Training and Capacity building, block and district level workshop | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Submission of Annual Report, Approval of WSP, budgets, bills and Annual public discloser of GW informations | | | | | | | | | | | | | | | | | | | | | | |

| | Task under ABJYH- Monthly activity chart 3rd and 4th year | 3rd Year | | | | | | | | | | | | 4th Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q1 | | | Q2 | | | Q3 | | | Q4 | | | Q1 | | | Q2 | | | Q3 | | | Q4 | | |
| | | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |
| 1 | Budhsangoshti-Meetings /Workshop/Trainings/ Awareness campaign and Quarterly Report (QR)submission | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Community mobilization events IEC,BCC & IPC and Gramsabha | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Investigations for WSP and Water budget and Implementation | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Interventions for supply & demand side water management and water use efficiency enhancement | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Strengthening of GP institutions and committees, Training and Capacity building, block and district level workshop | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Submission of Annual Report, Approval of WSP, budgets, bills and Annual public discloser of GW informations | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Exit - O&M , final bills and Final Report submission | | | | | | | | | | | | | | | | | | | | | | |

# Engagement of District Implementing Partner to support in implementation of Atal Bhujal Yojna for Cluster -07, District – Palwal

**(Blocks: Palwal, Hathin, Hodal , Hassanpur)**

## 4th Quarterly Progress Report

**April to June, 2022**

**Cluster -07, District – Palwal, Haryana**

**From:**

**Manav Rachna International Institute of Research and Studies, Faridabad, Haryana**
**District Implementing Partner**

**Submitted to**
**Chief Engineer / LCU, Irrigation & water Resource Department, Haryana, Panchkula**

## 1. Introduction- about Atal Jal

The Government of Haryana has received financing from Govt of India and World Bank towards the "Atal Jal, Haryana". The Irrigation &Water Resource Department, Government of Haryana an implementing agency invited proposals to provide the consulting services "Engagement of District Implementation Partner to support in Implementation of Atal Bhujal yojna (Atal Jal) for nine clusters of the State.

In tune with it, the Manav Rachna International Institute of Research and Studies, Faridabad, Haryana is selected to provide consultancy services as "District Implementing Partner to support in implementation of Atal Jal Yojana (Atal Jal) for **Cluster No. 07-Palwal** (Blocks: Palwal, Hathin, Hodal, Hassanpur).

The project services were commenced from 11 August. 2021. Immediately after signing the project contract, project office was established in the cluster on 24th Aug 2021. Its address and other communication detail were shared with all the concerned project officials.

## 2. Details of activities performed during the 4th Quarter:

a) Geo tagging, well inventory at village level- Geotagging has been done for every existing water structure in grampanchyat with available water capacity. It gives a complete picture of the surface water availability.



b) Meeting with VWSC members- For strengthen the committee in the panchayat, first meets have been planned with committee member including VWSC, Sahiya didi, Asha worker, Anganbari works, Pump operator, Nehru youva kendra members, selfhelp groups. Through this we tried to empower these people for future work and strengthen them by appropriate knowledge



c) Preparation and correction of WSP and filling of MIS data
d) Online training with TSA
e) 15% target achieve per month and WSP prepared
f) Weekly progress reporting
g) Meeting with District Commissioner of Palwal- DPMU organise meeting with DC once in a month.

h) Creating awareness among the villages about various agriculture schemes like PMKSY**,** MGNREGA, RKVY operated by Government of Haryana.

i) The activities at GP level by DIP and DPMU, Palwal have been published in several newspaper

दिल्ली/हरियाणा

नई दिल्ली, गरूवार, 2 जून 2022 2

# मिकाड़ा के तहत हर खेत को दिया जाएगा पानी-एस.डी.ओ. मिकाड़ा

*जिला कार्यान्वयन भागीदारी टीम ने डी.पी.एम.यू. के विशेषज्ञ के साथ मिलकर विभिन्न ग्राम पंचायतों में लोगों को किया जाएगरूक*



# पानी का सही इस्तेमाल करने को किया जागरूक

पलवल, 1 जून (ब्यूरो) : सिंचाई विभाग पलवल की अटल भूजल योजना के तहत जिला कार्यान्वयन भागीदारी टीम ने डीपीएमयू के विशेषज्ञ के साथ मिलकर ग्राम पंचायत बाबूपुर, लड़माकी, रणसिका व जलालपुर में लोगों से मिलकर उनको पानी का सही इस्तेमाल करने के लिए जागरूक किया, जिसमें गांव के लोगों ने काफी उत्साह के साथ भागीदारी की। एसडीओ मिकाड़ा ने लोगों को सूक्ष्म सिंचाई के बारे में बारीकी से बताते हुए लोगों को इसे अपनाने के लिए भी प्रेरित किया। लोगों को जागरूक करते हुए अटल भूजल के वारिशखान सुकेडिया ने कहा कि सूक्ष्म सिंचाई के उपयोग से लाखों लीटर पानी को बचाया जा सकता है। अगर इसी गति से जल का दोहन होता रहा तो वह दिन दूर नही जब लोगों को जल संकट का सामना करना पड़ेगा। उन्होंने कहा कि पुरूषो के साथ-साथ महिलाओं ने भी घरेलू कार्यो के लिए जिस तरह से जल का दुरूपयोग किया है। उन्हें भी अपनी जिम्मेदारी समझनी होगी कि जब तक लोग जल बचाने के लिए दैनिक व्यवहार में बदलाव नहीं करते तब तक पानी के व्यर्थ उपयोग को नहीं रोका जा सकता।

जल की हर एक बूंद का उपयोग सही तरीके से होना चाहिए, ताकि हम आगे वाली पीढियों के लिए जल भंडार को सुरक्षित रख सकें, क्योंकि जल के ऊपर जितना अधिकार हमारा है उतना ही आने वाली पीढियों का भी है। जल के बिना जीवन संभव नही है। जल ऐसा संसाधन नहीं है जिसे हम दोबारा पैदा कर सकते हैं।इसलिए जो जल भूगर्भ में उपस्थित है उसको ही हमे बचाना है और वर्षा व अन्य एकत्रित जल को भूगर्भ तक पहुंचाना जरूरी है। कनिष्ठ अभियंता नरेश ने बताया कि लोग फसल चक्र को बदलकर जल को बचा सकते है, जिन फसलों को कम जल की आवश्यकता होती है, हमें उन फसलों की खेती पर जोर देना चाहिए। सिंचाई की विधि में बदलाव करके भी जल को बचाया जा सकता है, जैसे स्प्रिंकल, ड्रिप पद्धति, अंडरग्राउंड पाइपलाइन जैसी विधियों का प्रयोग करके पानी के खर्च को कम किया जा सकता है।

उन्होंने कहा कि आज आपके पास जल की उपलब्धता हैं। इसलिए आप सोच नहीं पा रहे हैं, लेकिन कल जब जल ही नहीं रहेगा तब लोग खेती ही नहीं कर पाएंगे। अशोक ने बताया कि रिचार्ज बोरवेल लगा कर जलस्तर को बढ़ाया जा सकता है। वाटर हारवेस्टिंग लगा कर गांव के एकत्रित पानी को पीने व जोहड़ के पानी को साफ करके खेती व अन्य कार्यों में प्रयोग किया जा सकता है।

j) Well inventory carried out through the mobile application.

k) Special field visit with MICAD officer's under ABY and Convergence camp.


l) Installation and demonstration of Micro irrigation (Convergence Under MICADA)

m) **PRA activities and transit march in Grampanchyat**- PRA activates are the IEC tool to understand their own village in grater manner, through this activates people can understand their existing scenario, problems areas and planning to resolve. We organise this activates with villagers in 2nd meeting. Transit Walk is also the part of activities for better understanding of morphology, community interaction, agriculture activities, facility and water practices in the grampanchyat.


n) Jal Panchyat- Jal Panchyat is the 3rd meeting with committee and communities with draft report of WSP. This meeting includes previous meeting outcomes and secondary data reflection. People discuss on solution side for conservation of water and proper utilisation. This is the open forum for discussion on WSP and approval.

**o) Visit of** Field verification by DPMU, NPMU, SPMU and QCI

After submission of 3r[d] quarter report, this was verified by QCI, NPMU, SPMU and DPMU in respective grampanchyats


P) Documents Collection for MICADA implementation

q). Bite on Radio Manav Rachna by shri Promod Jain Sir.
Radio Manav Rachna record the bites of Promod Jain Sir (Nodal ABY, Haryana) on ABY to promote the projects among the common people.

r) Distribution of Water Test Kit in every Grampanchyat


s) Water sample collection in every Grampanchyat

t) Testing of surface and ground water quality at every Grampanchyat


**3. Status of Activities Performed up to the Quarter-**

| S. N | Progress on WSP preparation in cluster 07 (Palwal) | Palwal | Hodal | Hathin | Hassanpur | TOTAL |
|---|---|---|---|---|---|---|
| 1 | Total GPs selected block wise | 41 | 34 | 75 | 35 | 185 |
| 2. | Target of WSP till June 22 | 41 | 34 | 75 | 35 | 185 |
| 3. | WSP approved till March | 6 | 18 | 28 | 20 | 72 |
| 4. | WSP approved till December | 20 | 5 | 16 | 0 | 41 |
| 5 | WSP uploaded on MIS during the quarter (Apr-June 22) | 15 | 11 | 31 | 15 | 72 |

**4. Status of Deliverables up to the Quarter**

| S.N. | Deliverables | Status | Nos | Remarks |
|---|---|---|---|---|
| 1. | Weekly Progress Report. | Target achieved | 24 @ 4/month | Progress reports submitted timely and participated in review meetings |
| 2. | Preparation of Water Security Plan | Target achieved | 24/month total 72 as per above table | Uploaded on MIS after verification from DPMU/ SPMU |
| 3 | Field verification of WSP previously uploaded | Approved | 72 WSP | Verification by DPMU/Reg Off/SPMU/NPMU/ QCI as per schedule |

| | | | | |
|---|---|---|---|---|
| **4** | **Convergence** | **In progress** | **185 GP's** | **Mi-Cada Document collection** |
| **5** | **Re-Submission of WSP in 6 GP's** | **Completed** | **6** | **Resubmission of WSP, disqualified in QCI visit** |

**5. Meeting & discussions:**

**a)** **Meeting and discussion** with line Department officials like Department of Agriculture & welfare, Animal Husbandry, Forest department, Rural Development, Public Health Engineering & Development & Panchayat department, Panchyati Raj, Horticulture, Renewable energy, Irrigation Department etc.

**b)** **Field Visits and discussions-** Special field visits and discussions are taken up along with MICADA and DPMU.

**c)** **Installation and demonstration of Micro irrigation (Convergence Under MICADA)**

**6. Critical issues identified if any-** Water logging and related soil and water salinity in certain villages

**7. Way forward:**

**Set of activities prepared for next quarter for Implementation of WSP and awareness.**

- **a.** Planning of field activities (water testing, MICADA data collection, supply side implementation, Rain gauge, WFM) and community meeting.
- **b.** All the required data collection for Implementation.

**Newspaper coverage of events of ABY during 4th quarter for cluster 07**

# गांव नांगलजाट, अंधोप, गुदराना और बंचारी में किया जल सुरक्षा का निरीक्षण

**देश के** एक बड़े हिस्से में भूजल संसाधनों की कमी को दूर करने के लिए तैयार की अटल भूजल योजना

देश रोजाना, पलवल

हरियाणा सिंचाई विभाग के अंतर्गत राज्य परियोजना प्रबंधन इकाई से लक्केश ने बताया कि अटल भू-जल योजना का प्रमुख उद्देश्य हरियाणा में भू-जल संसाधनों का हाइड्रोजियोलॉजिकल डेटा नेटवर्क तैयार करना है और यह राज्य में भू-जल संसाधनों के प्रबंधन के लिए सामुदायिक संस्थानों के निर्माण को भी प्रोत्साहित करता है।

इस कार्यक्रम के तहत सामुदायिक लामबंदी और जागरूकता गतिविधियों के साथ-साथ हितधारकों के क्षमता निर्माण और पहचान किए गए प्राथमिकता वाले क्षेत्रों में लोगों की भागीदारी को बढ़ाने पर विशेष बल दिया जाएगा। इस योजना में जिला कार्यान्वयन भागीदार एनजीओ के रूप में स्टेट प्रोजेक्ट मैनेजमेंट यूनिट के साथ मिलकर योजना के विभिन्न पहलुओं पर ग्राम पंचायत की मदद करेंगे, जिसमें जल बजट और जल सुरक्षा योजनाओं के विकास सहित सामुदायिक लामबंदीय जल उपयोगकर्ता एसोसिएशन का गठन, आंकड़ा संग्रहण, सूचना, शिक्षा और संचार आदि गतिविधियां शामिल हैं। सिंचाई विभाग के अन्तर्गत हरियाणा में अटल भू-जल योजना अपने प्रारंभिक चरण में है और इसके कई सकारात्मक परिणाम सामने आने की उम्मीद है।

जल संरक्षण की जानकारी लेती टीम।

# आलीमेव व पावसर में लोगों को सूक्ष्म सिंचाई अपनाने के लिए किया प्रेरित

देश रोजाना, हथीन

सिंचाई विभाग पलवल से जिला सूचना, शिक्षा व संचार विशेषज्ञ वारिश खान ने बताया कि अटल भूजल योजना व मिकाडा के साथ मिलकर ग्राम पंचायत आलीमेव व पावसर में लोगों से मिलकर उनको पानी का सही इस्तेमाल के लिए जागरूक किया गया। लोगों को भारी अनुदान राशि पर सूक्ष्म सिंचाई अपनाने के लिए प्रेरित किया व लोगों को आवश्यक दस्तावेजो के बारे में बताया, जिसके लिए जल्द ही गाव में कैंप लगाकर अधिक से अधिक लोगों को लाभ दिलाया जाएगा। इस पर गांव के लोगों ने काफी उत्साह के साथ भगीदारी की। एसडीओ मिकाड़ा प्रेम सिंह ने लोगों को बारीकी से सूक्ष्म सिंचाई के बारे में बताया और लोगों को इसे अपनाने के लिए भी प्रेरित किया। लोगों को जागरूक करते हुए अटल भूजल से वारिश खान ने कहा कि इस तरह से लाखों लीटर पानी को बचाया जा सकता है। उन्होंने कहा कि अगर इसी गति से जल का दोहन होता रहा तो वह दिन दूर नही जब लोगों को जल संकट का सामना करना पड़ेगा। पुरूषों के साथ-साथ महिलाओं ने भी घरेलू कार्यो के लिए जिस तरह से जल का दुरूपयोग किया है, उन्हें भी अपनी जिम्मेदारी समझनी होगी।

लोगों को जागरूक करते अधिकारी।

कनिष्ठ अभियंता नरेश ने बताया कि किस तरह से लोग फसल चक्र को बदल कर जल को बचा सकते है, जिन फसलों को कम जल की आवश्यकता होती है, हमें उन फसलों की खेती पर जोर देना चाहिए। अशोक ने बताया कि रिचार्ज बोरवेल लगाकर जलस्तर को बढ़ाया जा सकता है। वाटर हारवेस्टिंग लगाकर गांव के एकत्रित पानी को पीने व जोहड़ के पानी को साफ करके खेती व अन्य कार्यों में प्रयोग किया जा सकता है। गांव के लोगों ने भी अपनी मांगे रखते हुए गांव में रिचार्ज बोरवेल लगवाने की मांग रखी व फव्वारा पद्धति सिंचाई अपनाने पर सहमती जताई। इस मौके पर कनिष्ठ अभियंता मिकाड़ा व नंबरदार नासिर, मुबारक अली आलीमेव सहित काफी लोग मौजूद रहे।

# पानी का सही इस्तेमाल करने को किया जागरूक

पलवल, 1 जून (ब्यूरो) : सिंचाई विभाग पलवल की अटल भूजल योजना के तहत जिला कार्यान्वयन भागीदारी टीम ने डीपीएमयू के विशेषज्ञ के साथ मिलकर ग्राम पंचायत बाबूपुर, लाडमाकी, रणसिका व जलालपुर में लोगों से मिलकर उनको पानी का सही इस्तेमाल करने के लिए जागरूक किया, जिसमें गांव के लोगों ने काफी उत्साह के साथ भागीदारी की। एसडीओ मिकाड़ा ने लोगों को सूक्ष्म सिंचाई के बारे में बारीकी से बताते हुए लोगों को इसे अपनाने के लिए भी प्रेरित किया। लोगों को जागरूक करते हुए अटल भूजल के वारिशखान सूकेडिया ने कहा कि सूक्ष्म सिंचाई के उपयोग से लाखों लीटर पानी को बचाया जा सकता है। अगर इसी गति से जल का दोहन होता रहा तो वह दिन दूर नही जब लोगों को जल संकट का सामना करना पड़ेगा। उन्होंने कहा कि पुरूषो के साथ-साथ महिलाओं ने भी घरेलू कार्यों के लिए जिस तरह से जल का दुरूपयोग किया है, उन्हें भी अपनी जिम्मेदारी समझनी होगी कि जब तक लोग जल बचाने के लिए दैनिक व्यवहार में बदलाव नहीं करते तब तक पानी के व्यर्थ उपयोग को नहीं रोका जा सकता।

जल की हर एक बूंद का उपयोग सही तरीके से होना चाहिए, ताकि हम आगे वाली पीढ़ियों के लिए जल भंडार को सुरक्षित रख सकें, क्योंकि जल के ऊपर जितना अधिकार हमारा है उतना ही आने वाली पीढ़ियों का भी है। जल के बिना जीवन संभव नही है। जल ऐसा संसाधन नहीं है जिसे हम दोबारा पैदा कर सकते हैं। इसलिए जो जल भूगर्भ में उपस्थित है उसको ही हमे बचाना है और वर्षा व अन्य एकत्रित जल को भूगर्भ तक पहुंचाना जरूरी है। कनिष्ठ अभियंता नरेश ने बताया कि लोग फसल चक्र को बदलकर जल को बचा सकते है, जिन फसलों को कम जल की आवश्यकता होती है, हमें उन फसलों की खेती पर जोर देना चाहिए। सिंचाई की विधि में बदलाव करके भी जल को बचाया जा सकता है, जैसे स्प्रिंकल, ड्रिप पद्धति, अंडरग्राउंड पाइपलाइन जैसी विधियों का प्रयोग करके पानी के खर्च को कम किया जा सकता है।

उन्होंने कहा कि आज आपके पास जल की उपलब्धता है। इसलिए आप सोच नहीं पा रहे हैं, लेकिन कल जब जल ही नहीं रहेगा तब लोग खेती ही नहीं कर पाएंगे। अशोक ने बताया कि रिचार्ज बोरवेल लगा कर जलस्तर को बढ़ाया जा सकता है। वाटर हारवेस्टिंग लगा कर गांव के एकत्रित पानी को पीने व जोहड़ के पानी को साफ करके खेती व अन्य कार्यों में प्रयोग किया जा सकता है।

# गिरते जलस्तर को ऊंचा उठाने के लिए उठाए जाएं ठोस कदम

पलवल, 18 मई। उपायुक्त कृष्ण कुमार की अध्यक्षता में कैंप कार्यालय में अटल भूजल योजना के संदर्भ में समीक्षा बैठक आयोजित की गई। उन्होंने योजना को सुचारू ढंग से क्रियान्वित करने बारे दिशा-निर्देश दिए। उपायुक्त ने उक्त कार्यों को पूरा करने के लिए टीम को निर्देश दिए कि जो भी डबल्यू.एस.पी. बनाए जाने हैं, उसके लिए सभी मुख्य विभागों की मदद ली जाए, ताकि भविष्य को ध्यान में रखते हुए पानी के गिरते हुए स्तर को रोका जा सके। इस संदर्भ में साप्ताहिक बैठक आयोजित की जाएगी। जिले के चार खंडों क्रमश: हथीन, पलवल, हसनपुर, होडल के गिरते भू-जल स्तर को ऊंचा उठाने के लिए ठोस कदम उठाए जाएंगे।

# 'हर खेत को पानी देना सिंचाई विभाग का लक्ष्य'

पानी का सही इस्तेमाल के लिए जागरूक करते हुए अधिकारी।

**लोगों को बताए जल दोहन को रोकने के उपाय**

पलवल, 28 जून (ब्यूरो): सिंचाई विभाग पलवल से जिला सूचना, शिक्षा व संचार विशेषज्ञ वारिश खान सुकेडिया ने बताया कि अटल भूजल योजना व मिकाड़ा के साथ मिलकर ग्राम पंचायत आलीमेव व पावसर में लोगों से मिलकर उनको पानी का सही इस्तेमाल के लिए जागरूक किया गया।

लोगों को भारी अनुदान राशि पर सूक्ष्म सिंचाई अपनाने के लिए प्रेरित किया व लोगों को आवश्यक दस्तावेजो के बारे में बताया, जिसके लिए जल्द ही गाव में कैंप लगाकर अधिक से अधिक लोगों को लाभ दिलाया जाएगा। इस पर गांव के लोगों ने काफी उत्साह के साथ भगीदारी की।

एसडी.ओ.मिकाड़ा प्रेम सिंह ने लोगों को बारीकी से सूक्ष्म सिंचाई के बारे में बताया और लोगों को इसे अपनाने के लिए भी प्रेरित किया। लोगों को जागरूक करते हुए अटल भूजल से वारिश खान सुकेडिया ने कहा कि इस तरह से लाखों लीटर पानी को बचाया जा सकता है। उन्होंने कहा कि अगर इसी गति से जल का दोहन होता रहा तो वह दिन दूर नही जब लोगों को जल संकट का सामना करना पड़ेगा।

पुरूषों के साथ-साथ महिलाओं ने भी घरेलू कार्यों के लिए जिस तरह से जल का दुरूपयोग किया है, उन्हें भी अपनी जिम्मेदारी समझनी होगी। जब तक लोग जल बचाने के लिए दैनिक व्यवहार में बदलाव नहीं करते तब तक पानी के व्यर्थ उपयोग को नहीं रोका जा सकता।

जल की हर एक बूंद का उपयोग सही तरीके से होना चाहिए, ताकि हम आगे वाली पीढ़ियों के लिए जल भंडार को सुरक्षित रख सकें, क्योंकि जल के ऊपर जितना अधिकार हमारा है, उतना ही आने वाली पीढ़ियों का भी है। जल के बिना जीवन संभव नही है। जल ऐसा संसाधन है, जिसे हम दोबारा पैदा नहीं कर सकते। इसलिए जो जल भूगर्भ में उपस्थित है। उसे ही हमें बचाना होगा। वर्षा व अन्य एकत्रित जल को भूगर्भ तक पहुंचाना जरूरी है। कनिष्ठ अभियंता नरेश ने बताया कि किस तरह से लोग फसल चक्र को बदल कर जल को बचा सकते है, जिन फसलों को कम जल की आवश्यकता होती है, हमें उन फसलों की खेती पर जोर देना चाहिए।

सिंचाई की विधि में बदलाव करके भी जल को बचाया जा सकता है, जैसे- स्प्रिंकल, ड्रिप पद्धति, अंडरग्राउंड पाइप लाइन विधि का प्रयोग करके पानी के खर्च को कम किया जा सकता है। आज आपके पास जल की उपलब्धता है। इसलिए हम सोच नहीं पा रहे है, लेकिन जब आने वाले समय में हमारे पास जल ही नहीं बचेगा तो लोग खेती ही नहीं कर पाएंगे।

अशोक ने बताया कि रिचार्ज बोरवेल लगाकर जलस्तर को बढ़ाया

**Table 1:- Work done report from April 2022 to June 2022**

| S. No. | Activity | Details | Targets | Achieved | Outcomes | Remarks (if any) |
|---|---|---|---|---|---|---|
| 1 | **WSP** | Jal Panchayat | 72+6 | 72+6 | Water budget prepared | |
| 1.1 | | GS resolution | 72+6 | 72+6 | | |
| 1.2 | | DPMU approval | 72+6 | 72+6 | | |
| 1.3 | | WSP uploaded | 72+6 | 72+6 | | |
| 1.4 | | DLI 3 intervention | 100% | 100% | | Proposed |
| 1.5 | | DLI 4 intervention | 100% | 100% | | proposed |
| 1.6 | | PRA | 72 | 72 | | |
| 1.7 | | Aquifer mapping | 72 | 72 | | |
| 1.8 | | Ground water monitoring well identification | | 159 | | Excel sheet attached in Annexure |
| 1.9 | | MICADA Registration | | | | Documents collection |
| 1.10 | | Geotagging | | 215 | | Excel sheet attached in annexure |
| 1.11 | | Co-ordination/ meetings with concern departments/DPMU/ DC | | 20 | | |
| 1.12 | | Radio bite under IEC | | 5/day | | Record running |
| **2** | **Facilitation of C B meetings at GP level** | | 72 | 72 | | |
| **3** | **Facilitation of IEC activities** | | | | | |
| 3.1 | Community mobilization events | | 72 | 72 | | |
| 3.2 | Poster placed in public place | | - | 72 | | Banner Display |
| 3.3 | Pamphlet distributed | | - | 72 | | MICADA, ABY |

| | | | | | |
|---|---|---|---|---|---|
| 3.4 | Awareness with Youth | 72 | 72 | | |
| 3.5 | Awareness with Women | 72 | 72 | | |
| 4 | **HMN data** | | | | |
| 4.1 | Well inventory | 50% of existing | 1345 | | Excel sheet attached in annexure |
| 4.2 | Monitoring well | 10 in every village | 159 | | Excel sheet attached in annexure |
| 4.3 | Geotagging of existing Ponds | | | | |
| **5** | **Institutional** | | | | |
| 5.1 | Meeting with line Department | As required | 20 | Discussion | For Data collation and discussion |
| 5.2 | Collaborated events with MICADA | - | 4 | | VWSC trainings |
| **6** | **Implementation** | | | | |
| 6.1 | DLI 3 implementation | | | | On progress |
| 6.2 | DLI 4 implementation | | | | On progress |
| 6.3 | Distribution of water test Kit | 108 | 108 | | |
| 6.4 | Water Sample Collection | 108*2 | 108*2 | | |
| 6.5 | Sample testing at GP level | 108GP | 108GP | | In All GP's |
| 6.6 | WFM | | | | Document collection |

**Table 2:- Future Work Plan from July 2022 to September 2022**

1. **Set of activities prepared for next quarter for consignment of WSP**
2. Consolidation of field activates w.r.t convergence refer in WSP
3. Coordinate with line departments for supply side and demand side implementation.
4. Regular meeting with DPMU and DC.
5. Meeting with line departments for proper convergence.
6. Regular meeting with communities and non-committee members for awareness.
7. Contact all Sarpanch and gram security for different activities.
8. IEC activities in Grampanchyat.

9. Identify the problems cover under ABY if anything new.
10. Collection of water sample for Lab test and submitted to PHED
11. Collection of water sample for testing in every village.
12. Regular Monitor the identified wells for water level.
13. Geotagging of all new recharge structure.
14. Demond side data collection.
15. Training and Distribution of Testing Kit in remaining Grampanchyat
16. Support to DPMU for establishment of Range gauge station
17. Monitoring Range gauge in monsoon in every Grampanchyat.
18. Regular collection of NOC's for WFM.
19. Monthly meeting with VWSC committee members.
20. Compilation of Monthly Plan.
21. Coordination with DPMU/SPMU/NPMU/QCI for WSP verification in all 72 Grampanchyat.
22. MICADA data collection and coordinate with DPMU for implementation of micro-irrigation in every Grampanchyat.

**Table 3: Quarterly WSP submitted:**

| **Quarterly WSP Submitted** | | | |
|---|---|---|---|
| **1st Quarter** | **2nd Quarter** | **3rd Quarter** | **4th Quarter** |
| **16** | **25** | **72** | **72** |

## Annexure:

1. DLI-3 & DLI-4 convergence
2. Monitoring Well
3. Well Inventory and Geotagging
4. EC-PH and water Level
5. MIDADA
6. List of Test Kit Distribution
7. List of water sample Collection
8. List of Water sample tested.

# ATAL BHUJAL YOJANA
# District Implementation Partner
# Cluster-07
## (Palwal Districts- Palwal, Hodal, Hatin & Has'pur)

**Centre for Advance Water Technology and Management**

**Manav Rachna International Institute of Research and Studies**

**Faridabad, India**

**17th Sept 2021**

# Manav Rachna-CAWTM, Faridabad

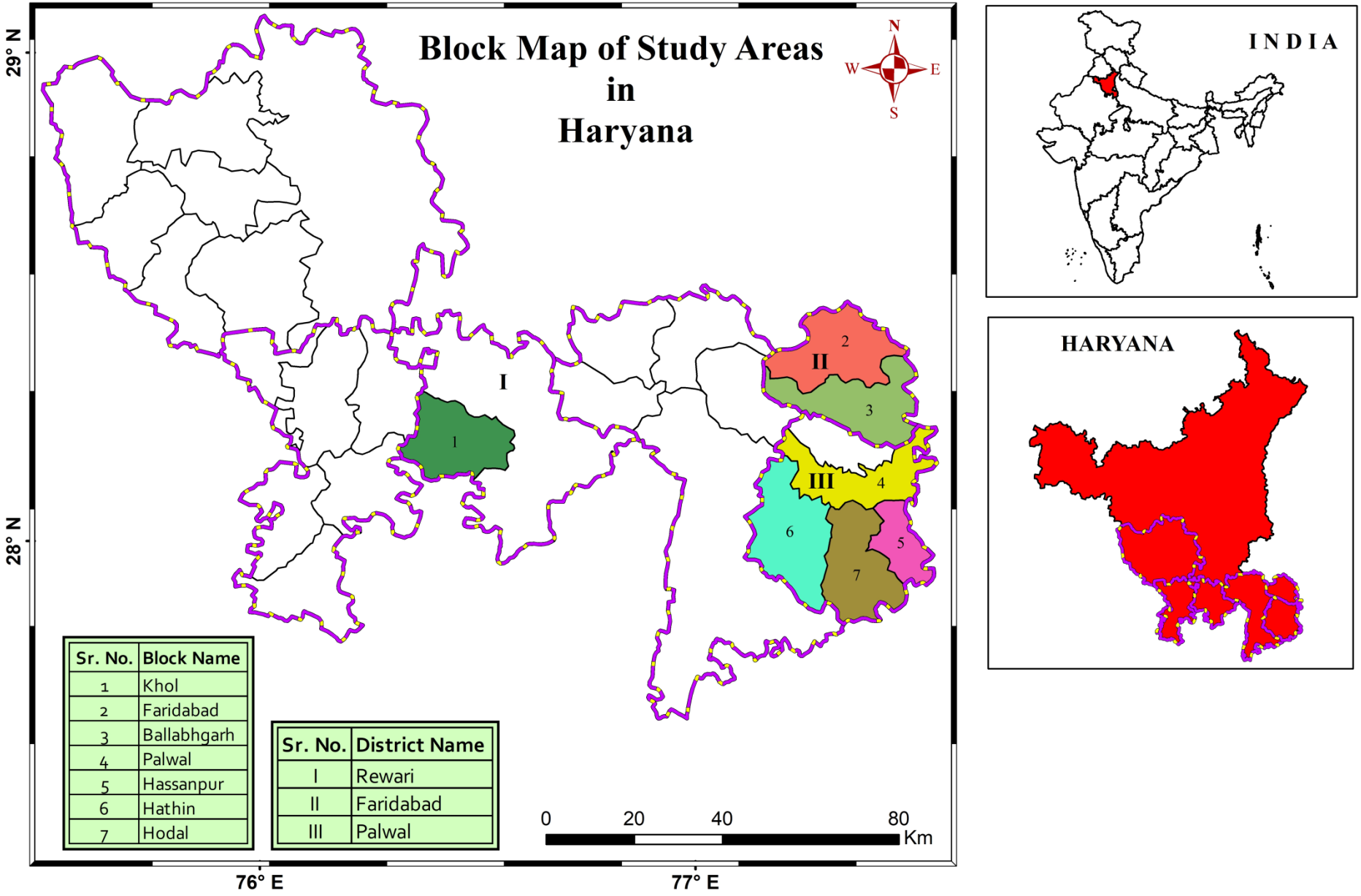
Established in April2017, out come of study made by MRIIRS on environmental deterioration due to drying of *Badkhal lake*

**"सदा सबके लिए शुद्ध जल"**

**" Clean water for all forever"**

## Activities

1. **R&D Studies**
2. **Technical Interventions**
3. **Training and Capacity Building**
4. **Out reach programs**
5. **Product and Innovation**




| Sr. No. | Block Name |
|---|---|
| 1 | Khol |
| 2 | Faridabad |
| 3 | Ballabhgarh |
| 4 | Palwal |
| 5 | Hassanpur |
| 6 | Hathin |
| 7 | Hodal |

| Sr. No. | District Name |
|---|---|
| I | Rewari |
| II | Faridabad |
| III | Palwal |

# Manpower Deployment

| | MANDATORY POSTS | Faridabad | Palwal | Total |
|---|---|---|---|---|
| 1 | Geologist | 2 | 2 | 4 |
| 2 | Agriculture Expert | 1 | 1 | 2 |
| 3 | Civil Engineer | 1 | 1 | 2 |
| 4 | IEC Expert | 3 | 4 | 7 |
| | **TOTAL** | **07** | **08** | **15** |
| | **Optional Posts** | | | |
| 5 | Community Worker | 9 | 12 | 21 |
| 6 | Back office staff | 2 | 2 | 04 |
| 7 | Project Management Team | 2 | 2 | 04 |

# Team of MRCAWTM

## Team

- Chair Professor : Dr Dipankar Saha, Former Member CGWB and Member Secretary CGWA
- Director : Dr Arunangshu Mukherjee, Professor, ES&E & Former Scientist, CGWB
- Associates : Mrs Shena Rai, Dr HS Saini, Dr Nidhi Didwania
- Research A : Ms Alifia Ibkar, Ms Khushboo Singh

# District Implementation Partner( DIP) under Atal Bhujal Yojana, Haryana , IWRD

| Cluster 06 : Team ( Faridabad-Rewari) | | | |
|---|---|---|---|
| **Post** | **Name** | **Mail Id** | **Contact No** |
| Hydrogeologist | Akshay | Akshayloohach1994@gmail.com | 7206247546 |
| | Sandeep Puniya | sandeeppunia2017@gmail.com | 9671306328 |
| Agriculture specialist | Rahul Pandey | Pandeyrp15@gmail.com | 9452952015 |
| Water conservation specialist | Prabir Mondal | Hetc.probir@gmail.com | 9958247496 |
| IEC Expert | Mahesh | mkr849441@gmail.com | 8059012054 |
| | Ravi Ku Parmar | Raviparmar2511@gmail.com | 8744069485 |
| | Vaishali Mathur | vaishalimathur78@gmail.com | 9990455824 |
| | | | |
| **Team Leader, Cl 06:** Akshay, Akshayloohach1994@gmail.com, 8090421830 | | | |

**Team Coordinator: Ms Sneha Rai, Assistant Professor, ES&E, MRIIRS, Faridabad 121001,**
**sneharai.fet@mriu.edu.in 8084136477**
**Project In charge: Dr Arunangshu Mukherjee, Prof & Head, ES&E and Director, CAWTM, MRIIRS,**
**arunangshu.fet@mriu.edu.in, 9968805450**

# District Implementation Partner( DIP) under Atal Bhujal Yojana, Haryana , IWRD

| Cluster 07: Team( Palwal) | | | |
|---|---|---|---|
| **Post** | **Name** | **Mail Id** | **Contact No.** |
| Hydrogeologist | Amit Kumar | amitrajgeologist@gmail.com | 6395004498 |
| | Akash Kumar | kanhaiyaakash@gmail.com | 9835094561 |
| Agriculture specialist | Abhishek Chaudhary | Chaudharyabhishek551@gmail.com | 9760887521 |
| Water conservation specialist | Rahul Mehlawat | rahulmehlawat007@gmail.com | 9654913660 |
| IEC Expert | | | |
| | Ashok Kumar | ashokkumar21596 @gmail.com | 9306831443 |
| | Govind Madhav | Govindmadhav963@gmail.com | 9319636163 |
| | Mayank Jain | mayank.singla.jain@gmail.com | 9711199365 |
| **Team Leader, Cl 07: Amit Kumar,** amitrajgeologist@gmail.com, 6395004498 | | | |

**Team Coordinator: Ms Sneha Rai, Assistant Professor, ES&E, MRIIRS, Faridabad 121001,**
**sneharai.fet@mriu.edu.in 8084136477**
**Project In charge: Dr Arunangshu Mukherjee, Prof & Head, ES&E and Director, CAWTM, MRIIRS,**
**arunangshu.fet@mriu.edu.in, 9968805450**

# GOAL OF ATALJAL HARYANA

The goal of Atal Bhujal Yojana is to demonstrate community-led sustainable ground water management in select water stressed areas of Haryana

**-------What is meant by water security?**

- **Household?**
  - **Reliable services**
  - **Health**
- **Community?**
  - **Resilience to disasters**
  - **Vulnerability of economy**
- **National?**
  - **survival of the state and nation?**
- **Environmental?**
  - **Ecological survival, from local to planet**

# A definition of water security

- The reliable availability of an acceptable quantity and quality of water for health, livelihoods and production, coupled with an acceptable level of water-related risks.( Grey and Sadoff (2007)).
- Not the same as ‘food security’ and ‘energy security’,
  - reliable access to sufficient supplies.
  - water security also captures destructive aspects of water
- floods and droughts

# Project Area for MRCAWTM

- Based on the techno-commercial evaluation of submitted bids, MRCAWTM has been selected for two clusters namely cluster -06 and 07.
- The cluster- 06 covers three blocks of two district i.e. Khol block of Rewari district and Faridabad & Ballabhgarh blocks of Faridabad district.
- The **cluster-07** covers four blocks of Palwal district namely- Palwal, Hathin, Hodal and Hassanpur.
- Together these clusters cover 296 GP having a total area of about 2226km$^2$.
- These clusters are situated in South-Eastern part of the State, in and around NCR.

# Summarized scope of work

- Preparation of water budget of each GP annually
- Preparation of GP wise water security plan annually and
- IEC based behavioral change in stakeholders regarding water use efficiency and sustainability.

# Detailed scope of work

| Sno | TASK | SUSTAINABLE MANAGEMENT OF GROUNDWATER | | | | |
|---|---|---|---|---|---|---|
| 1 | GP level WSPs & Water Budgeting | Data collection | Formulation of WSP | Annual approval of WSPs | Recommendations | Implementations |
| 2 | Capasity Building/ Training | Stakeholder level ( Monthly) | GP level (Quaterly) | Block level ( Annually) | District level ( Annually) | |
| 3 | Meeting /Workshop/ Mass awarness | Stakeholder level (Monthly) | GP level (Bi-monthly) | Block level (Six monthly) | DPMU level ( Annually) | SPMU level ( Annually) |
| 4 | Report Submission | Inception Report (1) | Report on Public disclouser of information on GW (4) | Quaterly progress reports (16) | Reports on WSPs (4) | Final Report (1) |
| | | Preparation of village profile with base line data all 296 GP | Training reports of all training conducted | Documentation of best practices, lessons, effective practices | | |

# Detailed scope of work

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | Strengthening of GP level Institutions | Develop Village Information Center -296 numbers | Preparation of Annual action Plan and Budget for GP and assistance in Audit | Preparation of district spacific communication BCC plan | Buil the capacity of VWSC,CBO, Village Govt Officials, telent hunt | Site selection for Monitoring Network Establishment |
| 6 | Development Participatory GW Management System | Awareness through mobile van at 296 GP level | IEC tool kit for facilitate efficent use of water | Preparation of App to reaching all HHs for active participation | Establish community monitoring mechanism at GP level | |

# METHODOLOGY

at Gram Panchayat level (GP)

Under two cluster- Faridabad CL06 and Palwal CL07

## Deliverables

1. GP level water budget for 296(111 +185) /yr*4=1184
2. GP level water security plan for 296 /yr*4=1184
3. Capacity building/ training in 296GP *4/yr*4=4736
4. Meeting and workshops 296GP*4*4=4736
5. Impact assessment study in all 7 blocks in 4$^{th}$ year
6. Report submission (10 hard copies) for 296*4*4=4736

# ATAL BHUJAL YOJNA HARYANA- MONTHLY ACTIVITY CHART OF DIP -MRIIRS

| | Task under ABJYH- Monthly activity chart 1st and 2nd year | 1st Year | | | | | | | | | | | | 2nd Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q1 | | | Q2 | | | Q3 | | | Q4 | | | Q1 | | | Q2 | | | Q3 | | | Q4 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | BIDDING | | | | | | | | | | | | | | | | | | | | | | | | |
| | LOA | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Establishment of Cluster Office at MRIIRS, Fbd, Appointment /Deployment of Man and Machine | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project Inception -Introductory Meeting with DPMUs and SPMU, obtaining GP list and maps, procurement of data | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Base line data collection and delineation of watershed | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Preparation & submission of Work Plan and **Inception Report** | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Develop Village Profile and Village Information Center | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Mapping all village institutions like VWSC, WUA,FPO, CBO,WMC, GWMA etc and convergence of all on going Govt schemes with ABJYH, Talent hunt events | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Budhsangoshti-Meetings /Workshop/Trainings/ Awareness campaign and Quarterly Report (QR)submission | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Community mobilization events IEC,BCC & IPC and Gramsabha | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Investigations for WSP and Water budget and Implementation | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Interventions for supply & demand side water management and water use efficiency enhancement | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Strengthening of GP institutions and committees, Training and Capacity building, block and district level workshop | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Submission of Annual Report, Approval of WSP, budgets, bills and Annual public discloser of GW informations | | | | | | | | | | | | | | | | | | | | | | | | |

| | Task under ABJYH- Monthly activity chart 3rd and 4th year | 3rd Year | | | | | | | | | | | | 4th Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q1 | | | Q2 | | | Q3 | | | Q4 | | | Q1 | | | Q2 | | | Q3 | | | Q4 | |
| | | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |
| 1 | Budhsangoshti-Meetings /Workshop/Trainings/ Awareness campaign and Quarterly Report (QR)submission | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Community mobilization events IEC,BCC & IPC and Gramsabha | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Investigations for WSP and Water budget and Implementation | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Interventions for supply & demand side water management and water use efficiency enhancement | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Strengthening of GP institutions and committees, Training and Capacity building, block and district level workshop | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Submission of Annual Report, Approval of WSP, budgets, bills and Annual public discloser of GW informations | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Exit - O&M , final bills and Final Report submission | | | | | | | | | | | | | | | | | | | | | | | | |

# Atal Bhujal Yojana Haryana- Quarterly activity chart of indivisuals experts for Cluster -06 & 07, DIP- MRIIRS

| Professional | Quarter- | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Groundwater Specialist /Hydro geologist | G1 | 1,2 | 2,4,5,7, | 2,4,5,7,9 | 2,4,5,6,9 | 2,4,5,6,9 | 2,4,7,9 | 4,7, 9,11 | 6,7,9, 11, | 6,7, 9,11, | 4,6,7, 11, | 4,6,7, 11, | 6,7,9, 11, | 6,7,9, 11, | 6,7,9, 11, | 11 | 11 |
| | G2 | 1,2 | 2,4,5,7, | 2,4,5,7,9 | 2,4,5,6,9 | 2,4,5,6,9 | 2,4,7,9 | 4,7, 9,11 | 6,7,9, 11, | 6,7, 9,11, | 4,6,7, 11, | 4,6,7, 11, | 6,7,9, 11, | 6,7,9, 11, | 6,7,9, 11, | 11 | 11 |
| | G3 | 1,2 | 2,4,5,7 | 2,4,5,7,9 | 2,4,5,6,9 | 2,4,5,6,9 | 2,4,7,9 | 4,7, 9,11 | 6,7,9, 11, | 6,7, 9,11, | 4,6,7, 11, | 4,6,7, 11, | 6,7,9, 11, | 6,7,9, 11, | 6,7,9, 11, | 11 | 11 |
| | G4 | 1,2 | 2,4,5,7 | 2,4,5,7,9 | 2,4,5,6,9 | 2,4,5,6,9 | 2,4,7,9 | 4,7, 9,11 | 6,7,9, 11, | 6,7, 9,11, | 4,6,7, 11, | 4,6,7, 11, | 6,7,9, 11, | 6,7,9, 11, | 6,7,9, 11, | 11 | 11 |
| Water conservation Specialist | W1 | 1,2 | 1,6 | 1,6 | 6,9, 10,11, | 6,9, 10,11, | 9, 10,11, | 7,9, 10,11, | 7, 9, 10,11, | 9, 10,11, | 9, 10,11, | 9, 10,11, | 8, 9, 10,11, | 8, 9, 10,11, | 8,9, 10,11, | 10, 11 | 11 |
| | W2 | 1,2 | 1,6 | 1,6 | 6,9, 10,11, | 6,9, 10,11, | 9, 10,11, | 7,9, 10,11, | 7, 9, 10,11, | 9, 10,11, | 9, 10,11, | 9, 10,11, | 8, 9, 10,11, | 8, 9, 10,11, | 8,9, 10,11, | 10, 11 | 11 |
| Agriculture Specialist | A1 | 1,2 | 2,5,9 | 2,5,9 | 2,5,9 | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 11 | 11 |
| | A2 | 1,2 | 2,5,9 | 2,5,9 | 2,5,9 | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 5,7,9, | 11 | 11 |
| IEC Cum Social Development Specialist | IEC1 | 1,2,3, | 2,3,4,9 | 2,3,4,9, | 2,3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 11 | 11 |
| | IEC2 | 1,2,3, | 2,3,4,9, | 2,3,4,9, | 2,3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 11 | 11 |
| | IEC3 | 1,2,3, | 2,3,4,9, | 2,3,4,9, | 2,3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 11 | 11 |
| | IEC4 | 1,2,3, | 2,3,4,9, | 2,3,4,9, | 2,3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 11 | 11 |
| | IEC5 | 1,2,3, | 2,3,4,9, | 2,3,4,9, | 2,3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 11 | 11 |
| | IEC6 | 1,2,3, | 2,3,4,9, | 2,3,4,9, | 2,3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 11 | 11 |
| | IEC7 | 1,2,3, | 2,3,4,9, | 2,3,4,9, | 2,3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 3,4,9, | 11 | 11 |

## Block wise Deployment of Experts

| Faridabad | Ballabhgarh | Khol | Palwal | Hodal | Hathin | Hassanpur |
|---|---|---|---|---|---|---|
| Cluster -06 | | | Cluster - 07 | | | |
| G1 | G1 &G2 | G2 | G3 | G3 | G4 | G4 |
| W1 | W1 | W1 | W2 | W2 | W2 | W2 |
| A1 | A1 | A1 | A2 | A2 | A2 | A2 |
| I1 | I2 | I3 | I4 | I5 | I6 | I7 |

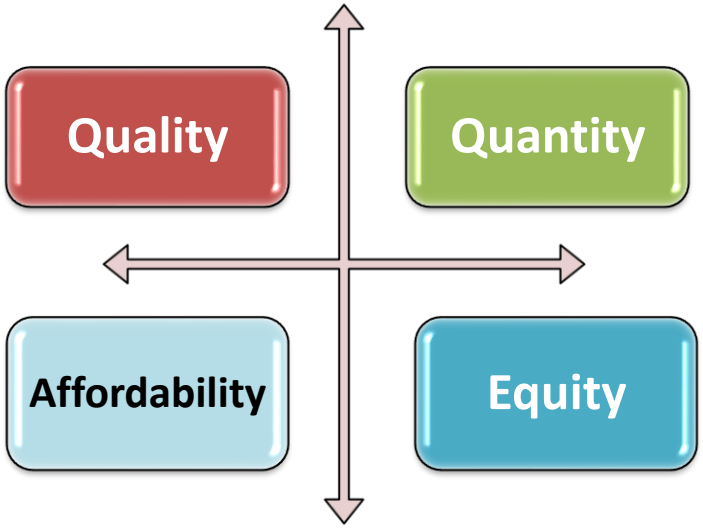
## List of activities under scope of DIP

| | |
|---|---|
| 1 | Preparation of inception report and work plan |
| 2 | Preparation of baseline report (Ref. to DLIs) |
| 3 | IEC campaign |
| 4 | Community mobilization and Strengthening of village / GP level institutions (GP / VWSC/ CBOs) |
| 5 | Facilitate participatory assessment and preparation of WSPs |
| 6 | Implementation preparation |
| 7 | Implementation facilitation |
| 8 | Exit & O & M |
| 9 | Capacity building |
| 10 | Providing assistance in financial and admin management |
| 11 | Documentation and reporting |

# Water Security

- Key indicators of water security risks:
  - Water Scarcity;
  - Floods;
  - Inadequate Water Supply and Sanitation;
  - Ecosystem Degradation and Pollution.

* Implementation measurement to make the water security on the ground :



# Water Security Planning Process

**Step 1 :**

- District/Block level meeting of Sarpanches.
- Constitution / Adoption of Water Management Committee (WMC
- Orientation on Atal Jal Program.
- Campaigns
- DIP consultation with constituent villages of GP.
- GP meeting to fix date for the People's Workshop; GP sends Invites to opinion leaders (10/village)
- Baseline data collection

**Step 2**

- Social Mobilization and stakeholders Consultation
- Participatory Workshops on data collection
- Water Balance: Presentation;
- Group work on ways and means to reduce groundwater demand and increase groundwater recharge;
- Workshop by DIP and WMC at the village level to explore options of demand and supply management.

- **Step 3 : Preparing Water Security Plan (WSP).**
- Village level meetings to chalk out Demand Decrease Plan (DDP) and Supply Increase Plan (SIP).
- DIP and WMC facilitates meetings. Transect walks of WMC-DIP to sites suggested for SIP along with key stakeholders and technical personnel from DPMU. GP level meeting: Discussion and finalization of DDP. Social Feasibility Report on SIP by DIP-WMC. Technical Feasibility Report on SIP by DPMU Technical Team. GP level meeting: Discussion on feasibility reports and finalization of SIP.

**Step 4**

- Compilation of Draft WSP by DIP-WMC, Submission to GP
- Consolidation and Finalization of Water Security Plan – Consultative Process
- DPMU Review of WSP by GP and DPMU. Revision of WSP by DIP-WMC.
- Draft WSP presented in Gram Sabha by the GP and a resolution is passed to approve the WSP and sent to DPMU.
- WSP fully complied, along with acknowledgement and Gram Sabha Resolution. Sent to DPMU.
- Approval of WSP by DPMU. Insertion of "Declaration" page. Sharing of approved WSP with GP, SPMU, NPMU and MIS Team
- Approvals by Competent authority

**Step 6**

- Social and Environmental Audit

## Data Collection Protocol

- A. Gram Panchayat Info :
  - A-I : Demographic Profile
  - A-II : land Use
  - A-III : Irrigated Area / Crops
    - MIS form /Additional Data Sheet
  - A-IV : Water Use Scenario
  - A-V : water Efficient Practices
  - A-VI : WSP related info

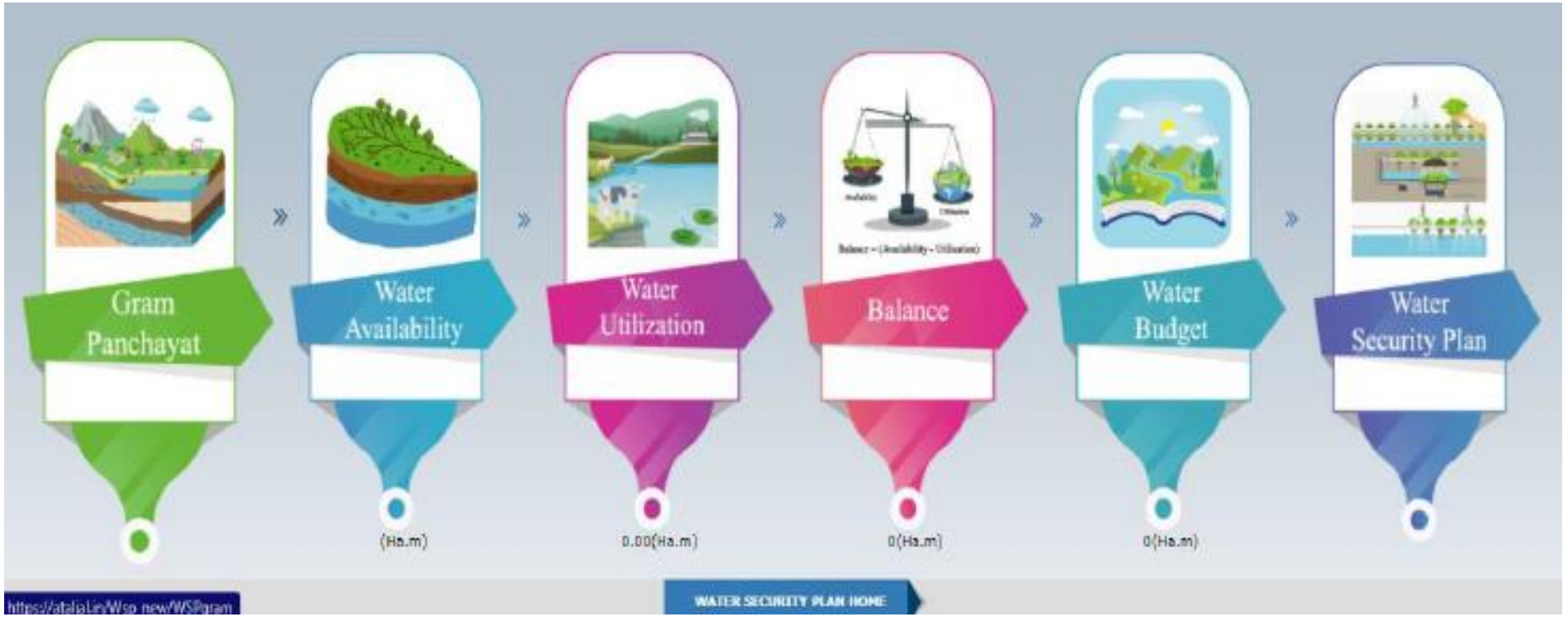
## Data Entry Protocol

### Steps

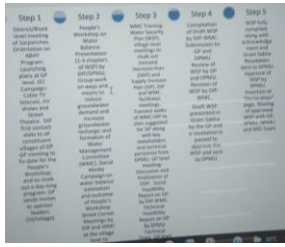
- D. Water Security Plan Module
  - Water Availability
  - Water Utilization
  - Water Balance
  - Water Budget
  - Water Security Plan

E. Environmental Monitoring

F. Gender Related Data


Gram Panchayat
Water Availability
(Ha.m)
Water Utilization
0.00(Ha.m)
Balance
0(Ha.m)
Water Budget
0(Ha.m)
Water Security Plan
WATER SECURITY PLAN HOME

# Strategies for Preparation of WSP



## Step-I

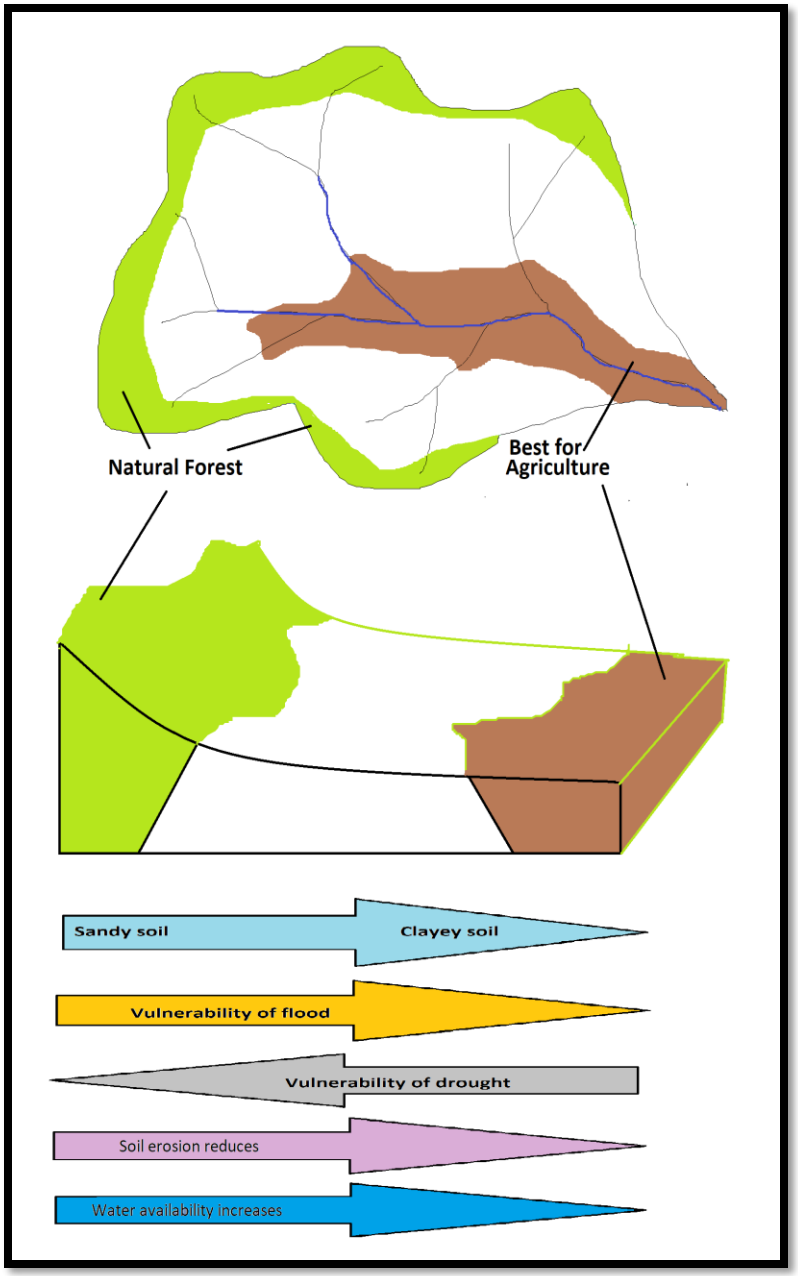
- Formulation and Introduction of DIP teams 13-14 Aug 2021
- Participated in the **Orientation workshop** organized by SPMU for DIPs- 16th Aug 21
- Deployment of Teams on Field, setting of field office
- Meeting with **DPMU Sh Rajeev Batra**, SE, YWSC Faridabad 24th Aug 21 and discussions with ABY District GW Expert Sh P Kushwah, and introduction of team
- Meeting with Gramsabha Head(BDO) about objective of ABY
- Started data collection involving SPMU, DPMU, Govt Depts, PRIs on aspects of **Water Budgeting** as per the MIS and data collection protocol
- Interactions with SPMU, Feed back shearing, receiving instructions
- Visit to **selected villages**, interactions with community collected data, photo
- Planning for use of **Manav Rachna FM Radio** for Awareness, scheduling of program, content preparation, expert selection, collection of bits
- Involvement of Mass Communication- Journalism Faculties & students and micro level planning, Initiated a **competition for banner deign** for ABY
- Involving **O P Bhalla Foundation and Media cell** of Manav Rachna in Awareness Campaign

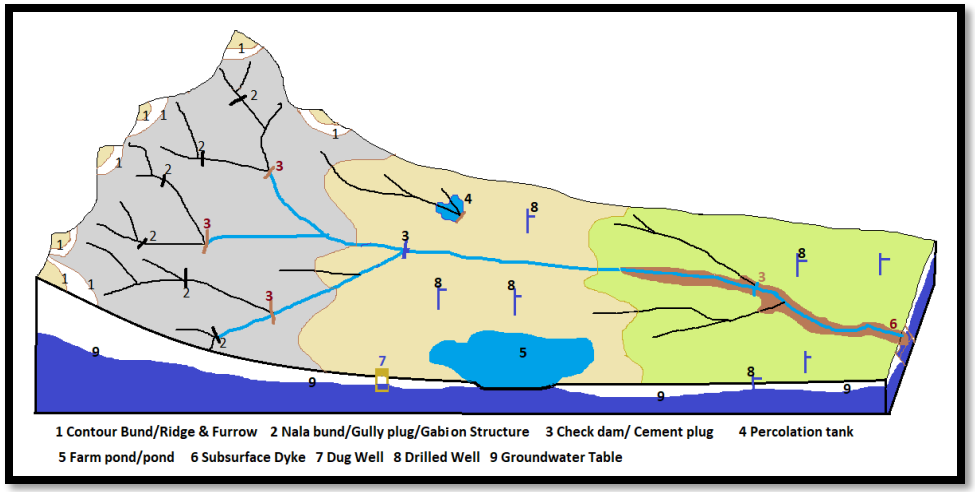
# Strategies for Preparation of WSP

## Step-II

- Recognizing and introduction with village level WSCs in all the GPs.
- Micro planning with VWSCs.
- Ensured participation of women and vulnerable groups through attendance in meetings.
- Data collection and data entry in the MIS as per the protocol.
- Assessment of Supply side and Demand side water requirements
- WSP to be prepared on the basis of water budget.
- WSP to be prepared to meet the specific challenges in the GP involving water-related investments / interventions.

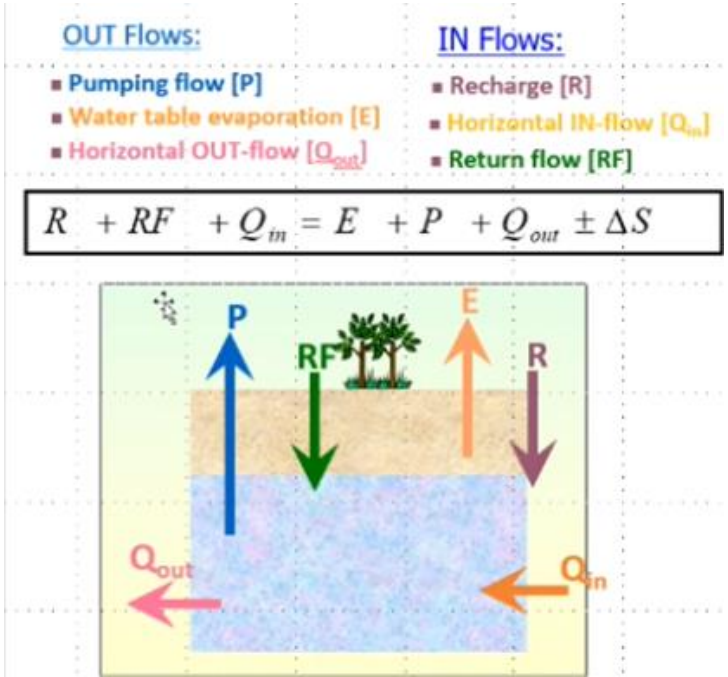
# Conceptualization



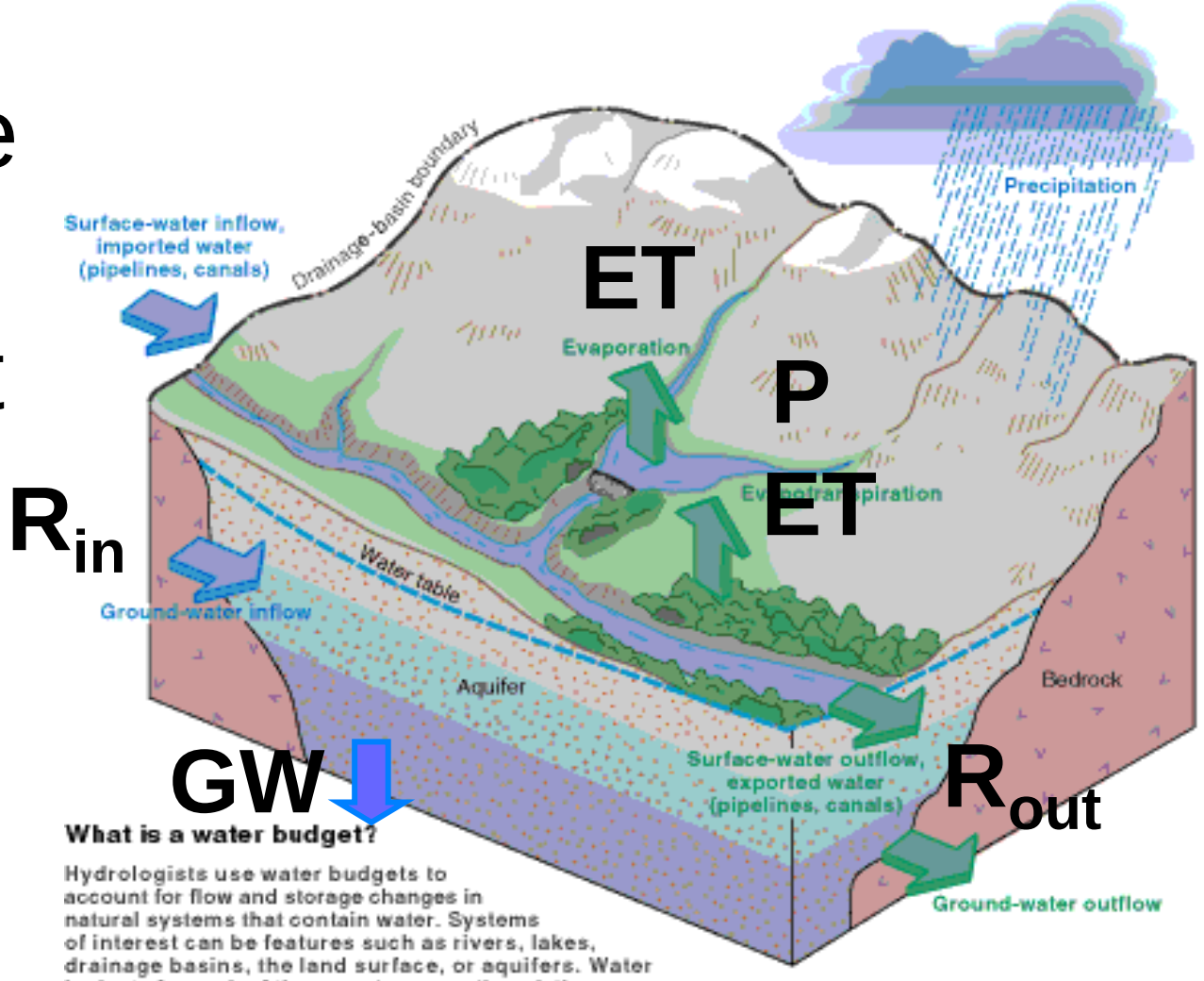




Schematic diagram of watershed along with conceptual locations of various possible interventions for improved water security

## GROUND WATER MANAGEMENT /BUDGTING



# Surface Water Budget




**What is a water budget?**

Hydrologists use water budgets to account for flow and storage changes in natural systems that contain water. Systems of interest can be features such as rivers, lakes, drainage basins, the land surface, or aquifers. Water budgets for each of these systems use the relation:

*(WATER INFLOW)−(WATER OUTFLOW)=(CHANGE IN WATER STORAGE)*

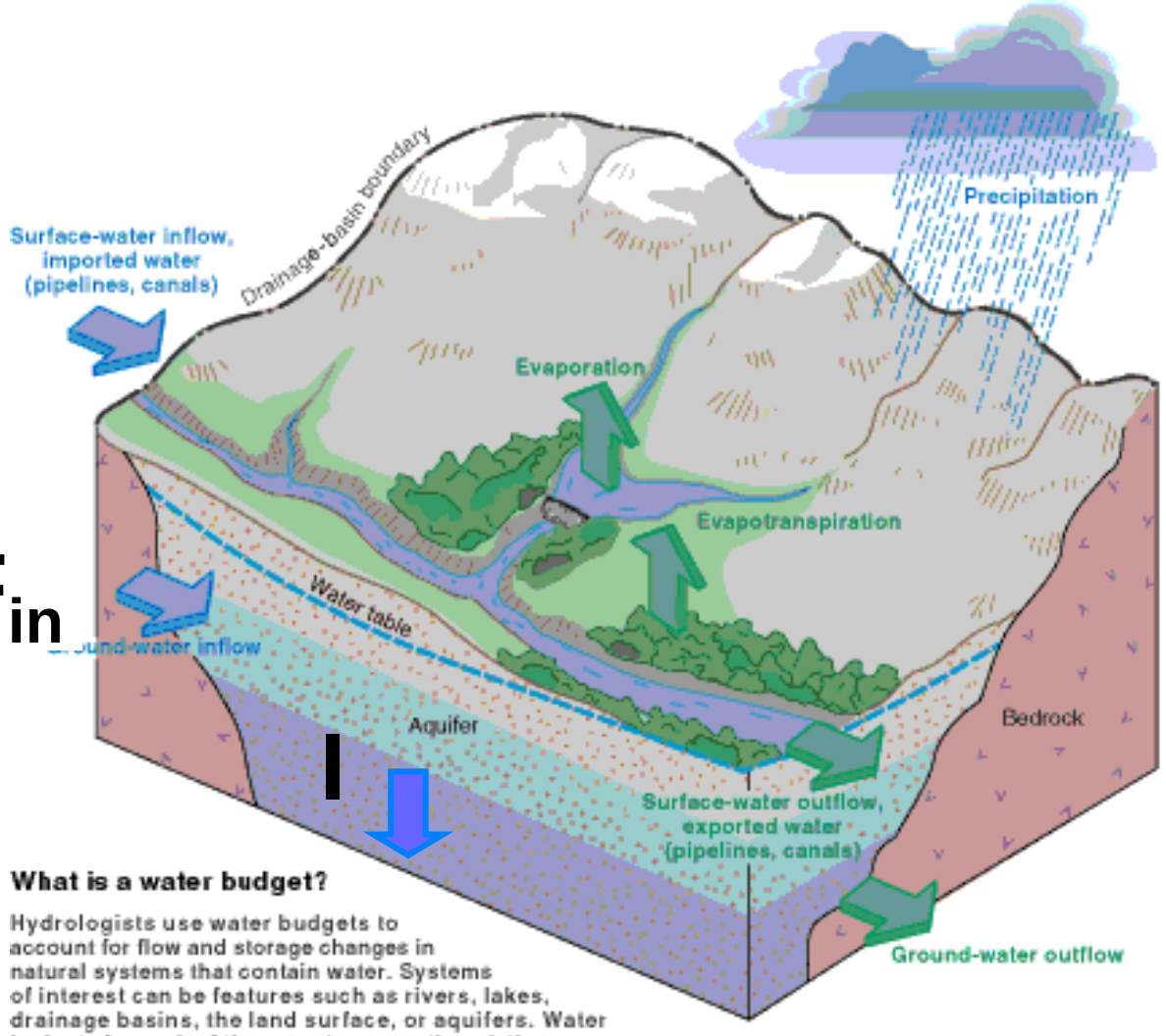
**Typical water budget components**

***WATER INFLOW***
- —Precipitation
- —Surface-water flow into basin
- — Imported water
- —Ground-water inflow

***WATER OUTFLOW***
- —Evaporation
- —Transpiration by vegetation (evapotranspiration)
- —Surface-water outflow
- —Exported water
- —Ground-water outflow

***CHANGE IN WATER STORAGE,*** *increased/decreased water in:*
- —Snowpack
- —Unsaturated soil zone
- —Streams, rivers, reservoirs
- —Aquifers

# Ground Water Budget




$F_{in}$

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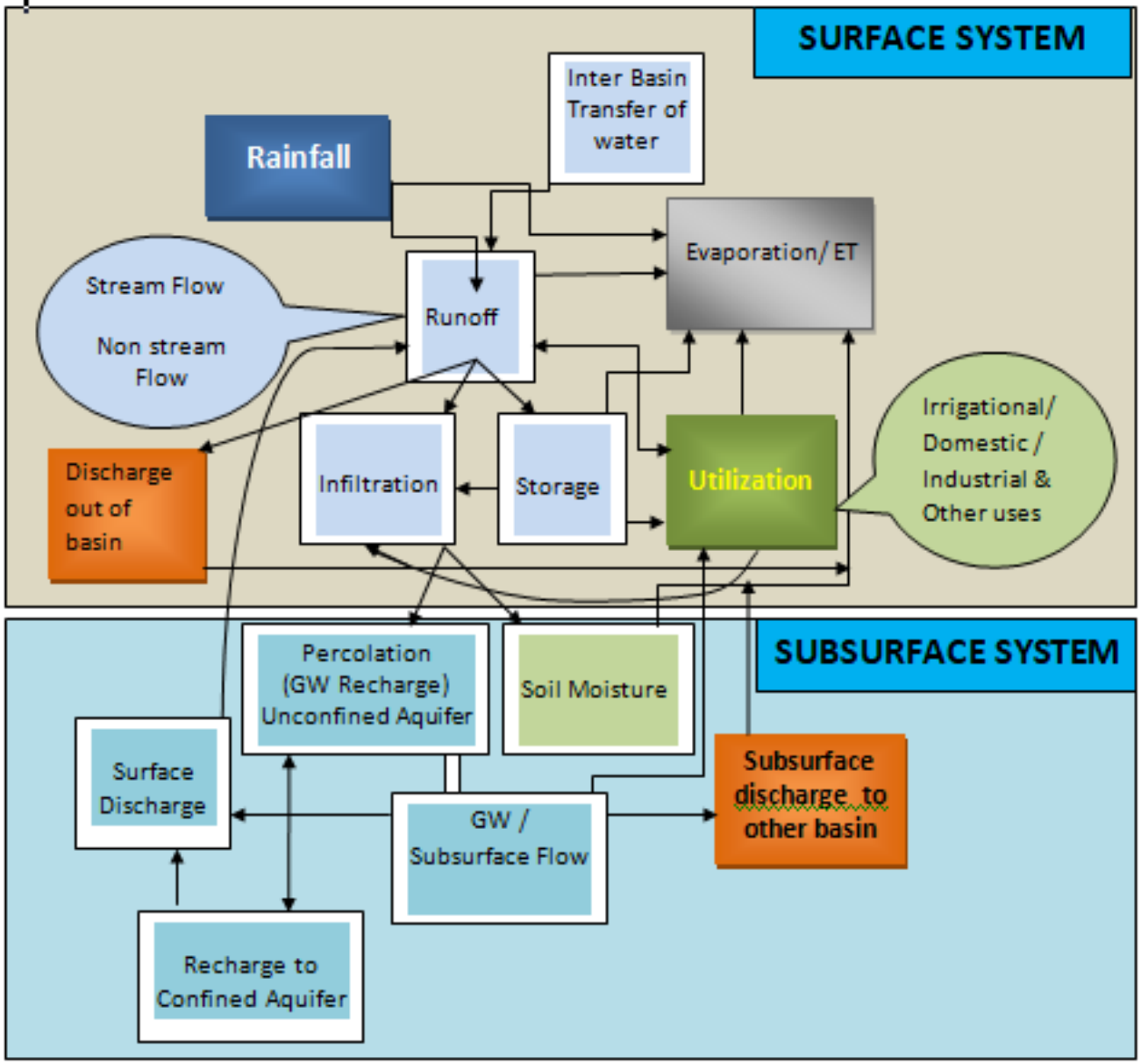
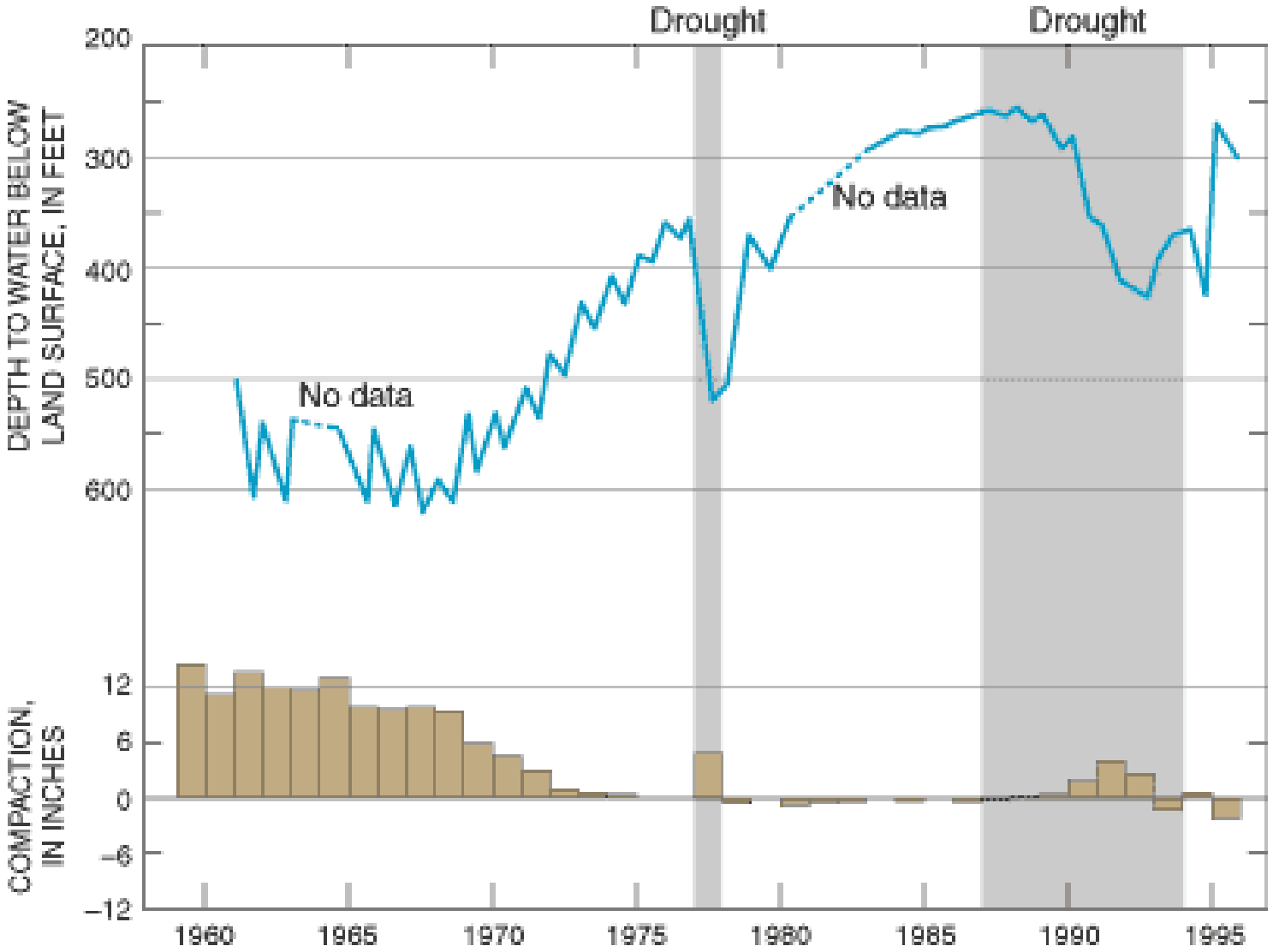
# Hydrological Cycle of Yamuna Basin



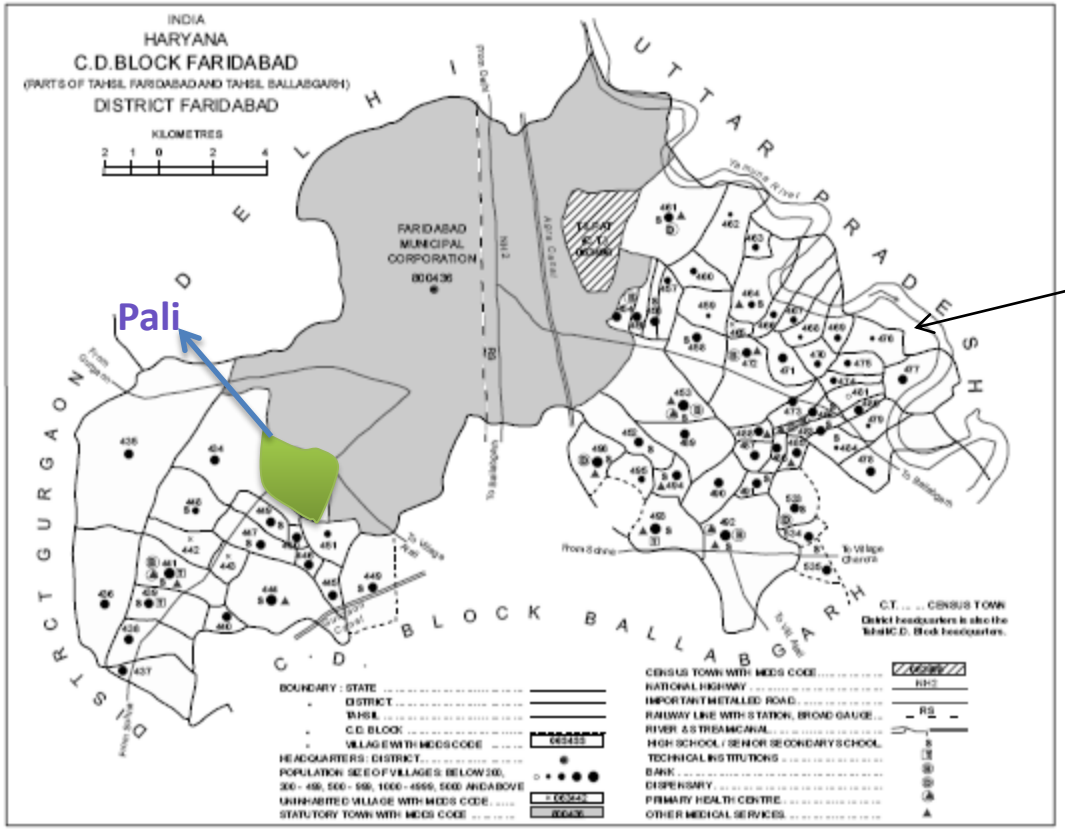
GROUNDWATER BUDGET EXAMPLE:
ROLE OF COMBINATION OF CLIMATE AND PUMPING
(San Joaquin Valley, CA)

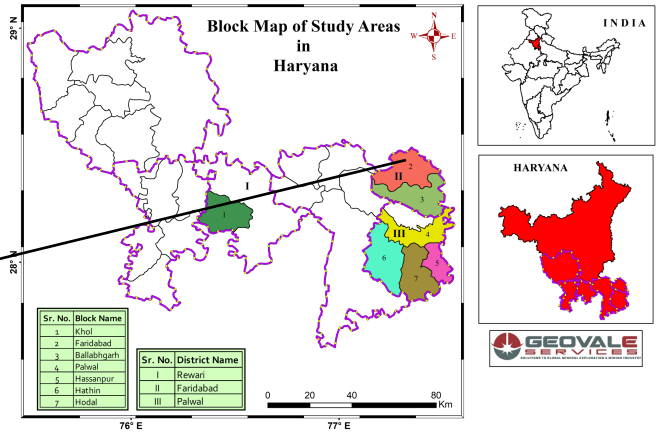


# PALI

## Block & District Faridabad,(Cluster-06)

- Pali(63433) 77.2442E, 28.37973N



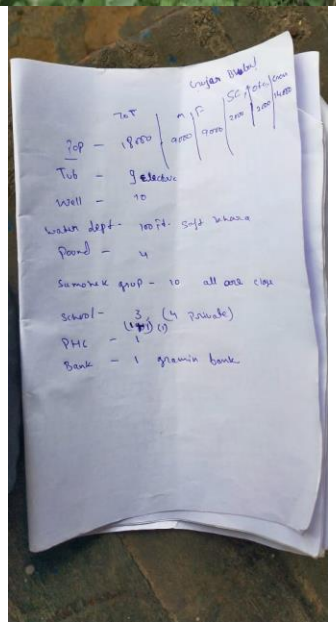

**Geomorphology-**
Aravali hills and Yamuna plains

**Geology-**
Yamuna Alluvium and Alwar Quartzite

**Av. Rainfall-** 600mm/yr

**Water budget index-** Negative


झरना मन्दिर
चौक
झरना मंदिर गली


Top – 1800
Tub – 8 detached
Well – 10
Water dept. – 100 ft. Soft water
Pond – 4
Samooh group – 10 all one class
School – 3 (4 Private)
PHC – 1
Bank – 1 gramin bank

PALI Pics


प्राथमिक स्वास्थ्य केन्द्र- पाली
यहाँ प्रसूति सेवाएं 24 घण्टे निशुल्क उपलब्ध है। एम्बुलेंस सेवा (टोल फ्री नं०-102) मो०-9311988930.


GOVT.BOYS SR.SEC. SCHOOL
स्कूल चलें हम


S.P CHEMICALS
K. No.42/45, MN.114, Kila No.15/2/3
Village Pali-Faridabad-121001
MFRS. of : PU PAINTS, EPOXY PAINTS, STOVING PAINTS, SYN PAINTS, LACQUERS & THINNERS
E-mail : spchemical67@gmail.com
GSTIN: 06ADBPT1158N1Z9


Pali पाली
Pali Village पाली गाँव
BAJRI
133
Image © 2021 Maxar Technologies
Google Earth
1985
28°22'54.56" N 77°15'20.88" E elev 204 m eye alt 3.11 km

# Groundwater Quality

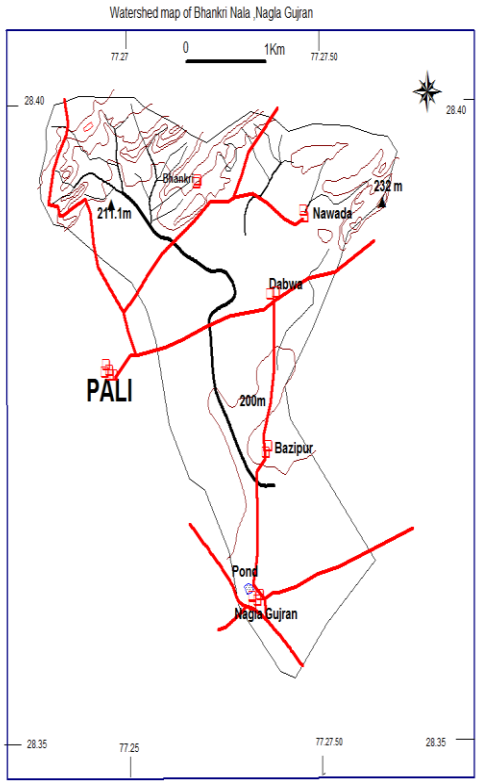
(CGWB)

| Location | pH | EC in µS/cm at 25 C | $CO_3$ | $HCO_3$ | Cl | $SO_4$ | $NO_3$ | F | $PO_4$ | Ca | Mg | Na | K | $SiO_2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/l | | | | | | | | | | | |
| Pali | 7.08 | 4608 | Nil | 163 | 1254 | 310 | 219 | 0.19 | nd | 314 | 170 | 430 | 21 | 27 |

# NAGLA

## Block Ballabhgarh,  District Faridabad,(Cluster-06)

The total area of the pond is 0.63ha and its perimeter is 319m long. A small water body is also located in the western corner of the pond having 0.1 ha area (856$m^2$) and is separated by the ponds embankment. Capacity 10000m3




# NAGLA POND



**Fig: Google Earth Map of March 2019 (upper) and February 2003 (lower) showing filled and dry pond of village Nagla Gujran respectively.**

Groundwater sample from hand pumps / tube wells around the area (within 1-4 km) showing EC in the range of 2338 µS/cm 16000 µS/cm

# Projects of

# CENTRE FOR ADVANCE WATER TECHNOLOGY AND MANAGEMENT

# On going R&D projects

## R&D Studies Under CAWTM

**1.1 Ongoing R&D projects**
**1.2 Completed R&D projects**
**1.3 New projects under way**


| | Project Name and Status | Funding Agency | Starting date & Period |
|---|---|---|---|
| 1 | Hydro Geological Survey for Aquifer Monitoring in Barmer Area, Rajasthan, **On going** | Cairns-O&G Vedanta Ltd | 02.07.21 36 months |
| 2 | Co-solving Water logging and Groundwater depletion issue in parts of Faridabad Smart City using Underground Taming of Flood water for Aquifer Storage and Recovery , **On going** | WTI, DST, GOI | 21 .05. 21 36 months |
| 3 | Eco Next Talent Hunt for Eco Smart Youth Leadership and Competence in Haryana, **On going** | NCSTC, DST, GOI | 06.03.19 36 months |
| **Current all on going projects** | | | |

# Completed Projects (2018-2021)

1. R&D Studies

| No | Project Name and Status | Funding Agency | Date of Comp. |
|---|---|---|---|
| 1 | Hydro Geological Survey for Aquifer Monitoring in Barmer Area, Rajasthan (2018-21). **Completed** | Cairns O&G Vedanta Ltd | June 2021 36 months |
| 2 | Communicating Science through Model Water and Eco-Health Clinic for quality of life. **Completed** | NCSTC, DST ,GOI | 06.03.19 15 months |
| 3 | USAID URBAN WASH Innovation Lab, **Completed** | USAID-NIUA | Dec 2019 |
| 4 | Detailed investigations in Khoh Village for Rainwater Harvesting, **Completed** | MSF, Gurgaon | April 2019 |
| 5 | ISP system for treating saline Groundwater-Techno-Commercial, **Completed** | Maharani I Paints Pvt Ltd. Prithla | Sept 2018 12 months |
| 6 | Reconnaissance survey for Water prospect in 10 adopted villages of Maruti-Suzuki Foundation **Completed** | MSF, Gurgaon | Dec 2018 |
| **All completed projects in last 4 years** | | | |

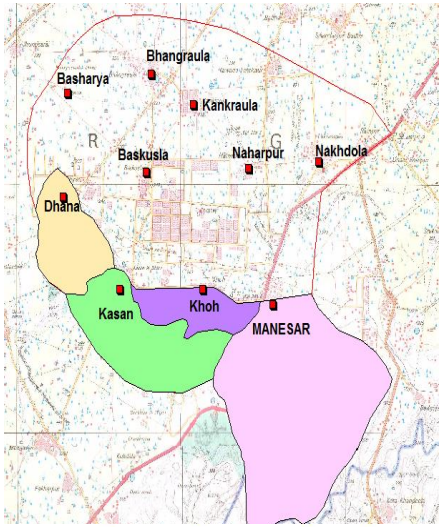
# New Projects

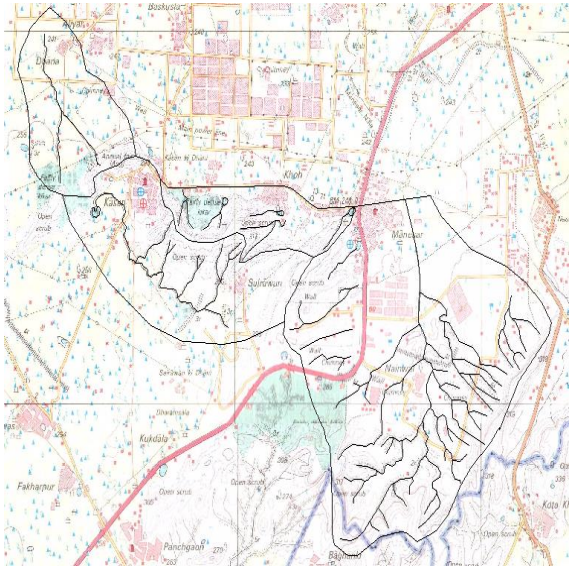
## 1. R&D Studies

| No | Project Name | Funding Agency | Date of Commencement |
|---|---|---|---|
| 1 | Haryana Atal Bhujal Yojna for Sustainable Management of Groundwater –through DIP | IWRD Haryana Under World Bank Assisted Central Sector Scheme | Aug 2021 for 48 months |
| 2 | Haryana Jal Jeevan Mission – State Implementation Support Agency (SISA) | PHED Haryana | Sept 2021 for 12 months |
| | | | |
| 3 | Investigation for lost runoff of Badkhal lake, Faridabad using Environmental Isotopes | Bhabha Atomic Research Center, GOI, Board of Research in Nuclear Sciences | Under Consideration 36 months |
| 4 | KRC under Jal Jeevan Mission through DDWS, MoJS, GOI | Department of Drinking Water and Sanitation, MoJS, GOI | Under Consideration 12 months |

# WATER SECURITY PROSPECT

in 10 adopted villages of Maruti-Suzuki Foundation



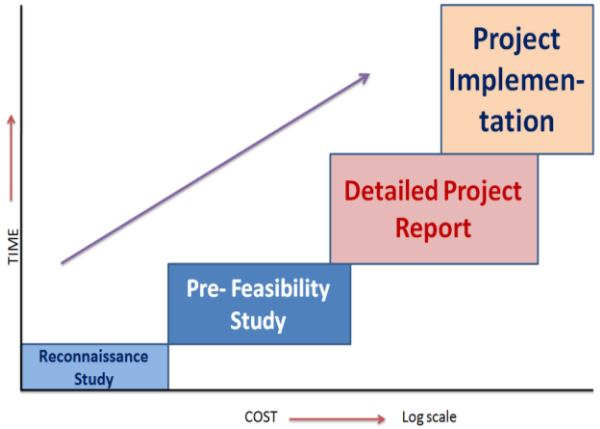




U Pond of Kasan

## Groundwater levels

- >60m bgl in Kasan, Dhana, Khoh, Bashariya, Nakhrola
- 24-26m in Bhangrola
- Dry Dug wells found at Dhana, Bashariya, Nakhrola and Bhangrola

## Flow Chart of Study



# Recommended Methods

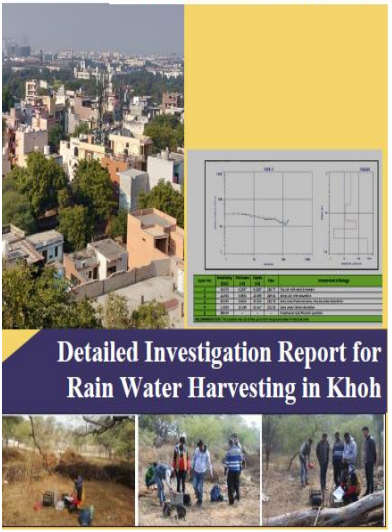
## SUM UP OF PROPOSED ACTIVITY

1. Trenching along ~2400m line with 1200 Auger hole drill.
2. De-silting of 0 .95ha pond area and renovation of 7 ponds of Khoh, embankment construction and plantation along bank.
3. Transfer of Water from IMT Pond to Shani Temple pond for recharge through percolation.
4. Existing dry Dug well recharge scheme
5. Dry and running drilled well recharge scheme.
6. Plantation along hill slope & water bodies.

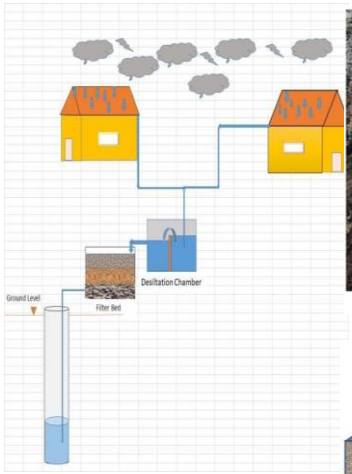
## IMPACT EXPECTED

- Filling of pond gone dry through alternative source
- Partial Rejuvenation of drilled wells gone dry
- Enhance sustainability and yield of running drilled wells.
- Improvement in ambient water quality of brackish groundwater
- Improvement of green cover and soil moisture

MARUTI SUZUKI FOUNDATION




Centre for Advance Water Technology and Management,
Manav Rachna International Institute of Research & Studies, Faridabad
(Deemed to be University Under Section 3 of UGC act 1956)



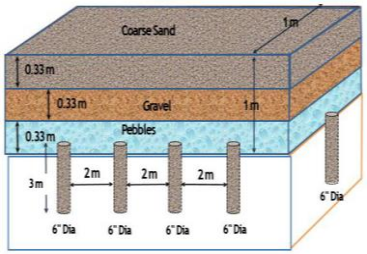


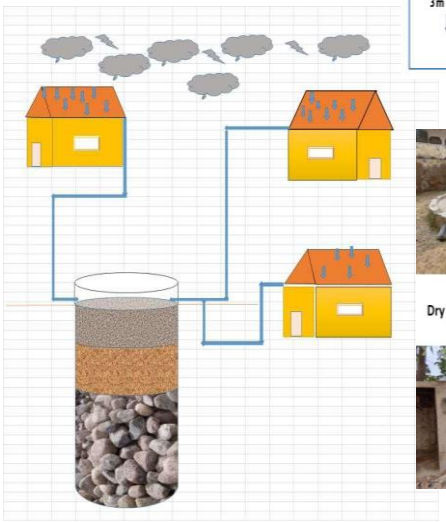
Proposed Trench cum Auger hole Recharge Site, Khoh


2006

2018

## Trench cum Auger hole



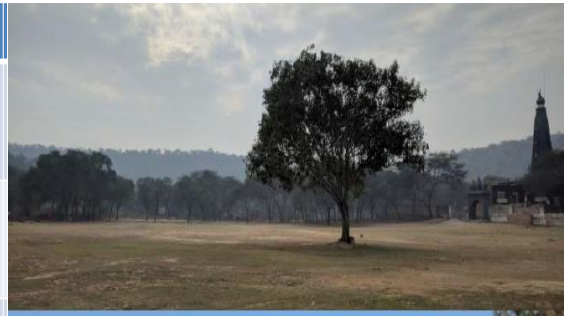



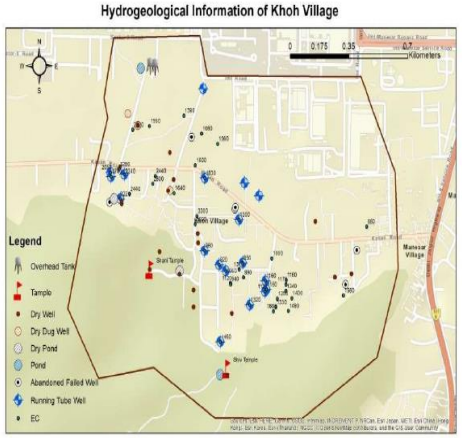

Hill top to Pond Distance=454m
Elevation Fall = 38 m ( 294 to 256)

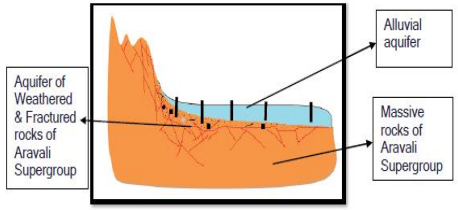
Pond to Hill top Distance=860m
Elevation Raise = 53 m ( 241 to 294)

# Detailed Investigation Report for Rain Water Harvesting in Khoh

| | Scope of Work |
|---|---|
| 1 | Data collection- Meteorological, Geological, Hydrological, hydrogeological ,Remote Sensing-GIS investigations |
| 2 | Groundwater inventory in post monsoon & water budgeting of the village |
| 3 | Water & Soil quality analysis- testing |
| 4 | Geophysical Investigations for locating community water well site & Artificial Recharge sites |
| 5 | Pond hydrological studies for revival |
| 6 | Plantation along hill slope – Survey, tests and recommendations |
| 7 | Over all Investigation report of project |



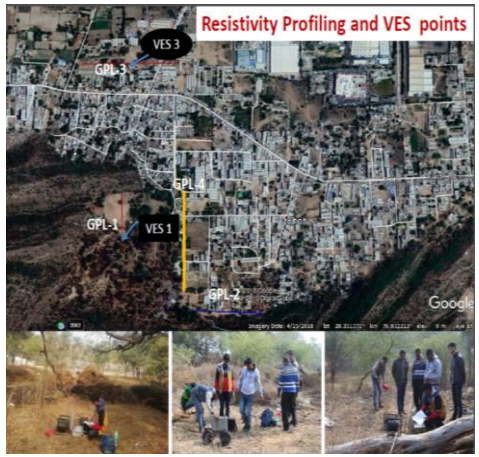



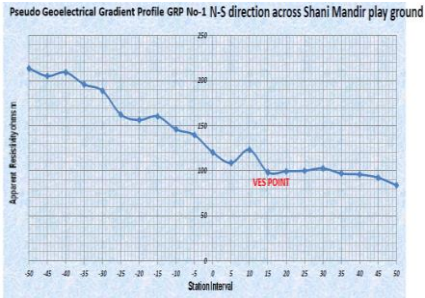





## Groundwater Inventory

- Groundwater level in the village varies between 70 to 140m bgl.
- Tube Well depth ranges from 90 to 225m bgl
- Well discharge is generally low, varies largely from 0.1 to 2.0 lps.
- Alluvial aquifer is having better discharge then hard rock aquifers.
- Groundwater quality is found fresh to slightly brackish and EC ranges from 850 to 3300µ s/cm

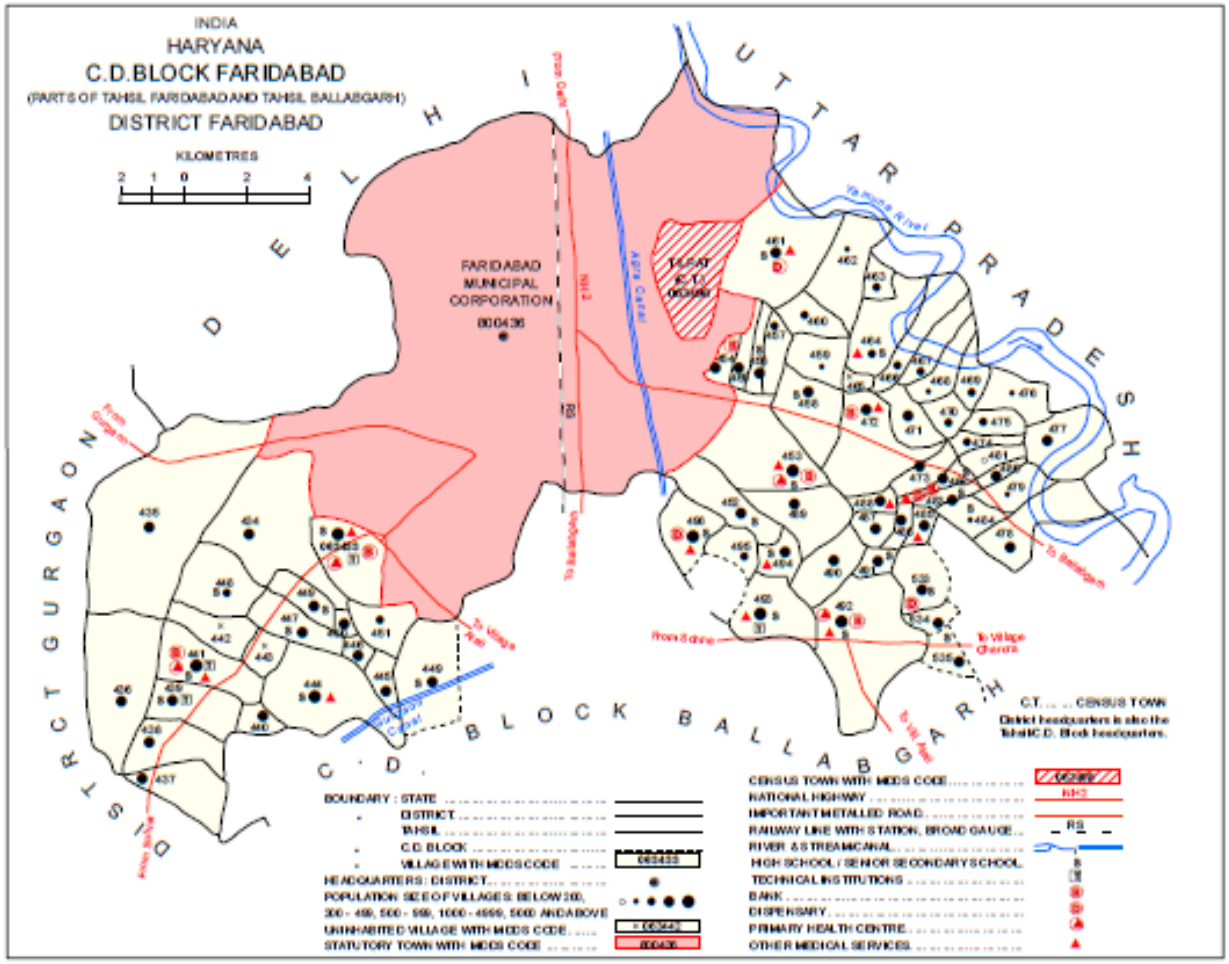



| S. No. | Low Resistivity(Ωm) | Between Profile length (m) | | VES Point | Interpreted Lithology |
|---|---|---|---|---|---|
| | | From | To | (m) | |
| 1 | 98-102 | 15 | 30 | 15 | |

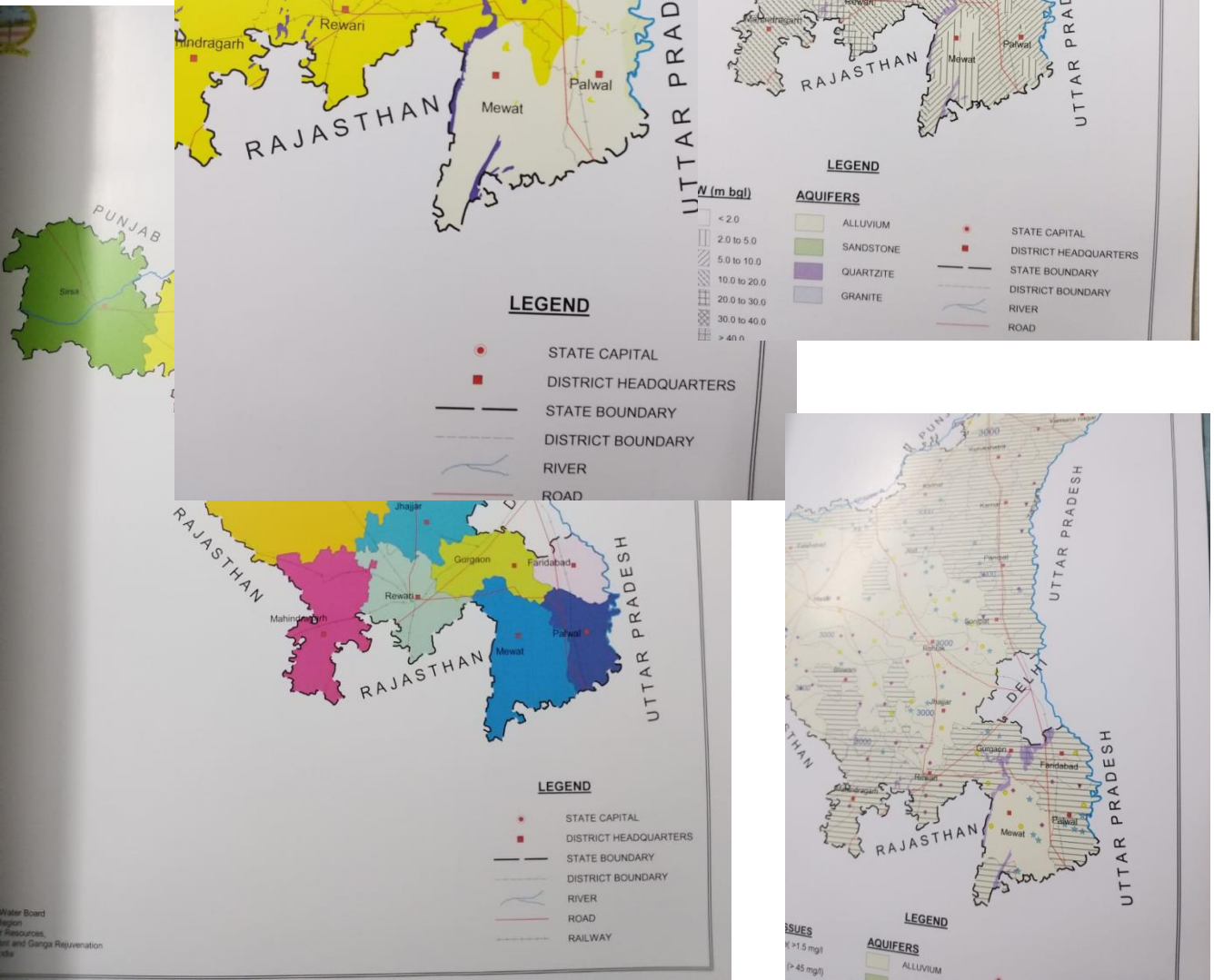
**Recommendation:** Lowest resistivity zone of fractured Quartzite has been interpreted between profile lengths 15m to 30m.VES point has been selected at lowest resistivity zone of 98Ωmat profile length 15m.

# THANKS




**FARIDABAD**

| | | | | |
|---|---|---|---|---|
| 1 | 77.18867 | 28.33081 | 63439 | Alampur(32) |
| 2 | 77.43768 | 28.42691 | 63474 | Sahrawak(166) |
| 3 | 77.46764 | 28.40908 | 63477 | Amipur(172) |
| 4 | 77.41176 | 28.39907 | 63473 | Badarpur Said(111) |
| 5 | 77.36253 | 28.43187 | 63455 | Badshahpur(140) |
| 6 | 77.42097 | 28.43233 | 63467 | Bhaskola(159) |
| 7 | 77.36835 | 28.46458 | 63461 | Dadsiya(147) |
| 8 | 77.19599 | 28.34065 | 63448 | Selakhari(18) |
| 9 | 77.23871 | 28.32597 | 63444 | Fatehpur tagga(29) |
| 10 | 77.21626 | 28.37468 | 63434 | Gothra mohbatabad(14) |
| 11 | 77.42568 | 28.40102 | 63482 | Jasana(110) |
| 12 | 77.4111 | 28.41628 | 63471 | Kanwara(156) |
| 13 | 77.25389 | 28.35639 | 63451 | Kheri Gujran(22) |
| 14 | 77.17956 | 28.30563 | 63437 | Khori Jamalpur(34) |
| 15 | 77.39852 | 28.45971 | 63462 | Kirawali(148) |
| 16 | 77.16746 | 28.33327 | 63436 | Kot(16) |
| 17 | 77.40322 | 28.45102 | 63463 | Lalpur(149) |
| 18 | 77.25626 | 28.32499 | 63446 | Qureshipur(24) |
| 19 | 77.17493 | 28.37855 | 63435 | Mangar(15) |
| 20 | 77.24138 | 28.35196 | 63450 | Nekpur(23) |
| 21 | 77.22005 | 28.36213 | 63449 | Pakhal(21) |
| 22 | 77.2442 | 28.37973 | 63433 | Pali(13) |
| 23 | 77.35661 | 28.43261 | 63454 | Palwali(138) |
| 24 | 77.21043 | 28.36292 | 63447 | Pawta(20) |
| 25 | 77.42651 | 28.41683 | 63475 | Phulera(165) |
| 26 | 77.26765 | 28.34309 | 63499 | Sarurpur(27) |
| 27 | 77.43977 | 28.40456 | 63480 | Sidhola(168) |
| 28 | 77.19054 | 28.31471 | 63438 | Sirohi(33) |
| 29 | 77.40431 | 28.38966 | 63488 | Tajupur(112) |
| 30 | 77.20695 | 28.32533 | 63443 | Alawalpur(30) |


Sonipat
Rohtak
Jhajjar
Gurgaon
Faridabad
Rewari
Mahendragarh
Palwal
Mewat
DELHI
UTTAR PRADESH
RAJASTHAN
PUNJAB
Sirsa
LEGEND
STATE CAPITAL
DISTRICT HEADQUARTERS
STATE BOUNDARY
DISTRICT BOUNDARY
RIVER
ROAD
RAILWAY
N (m bgl)
< 2.0
2.0 to 5.0
5.0 to 10.0
10.0 to 20.0
20.0 to 30.0
30.0 to 40.0
> 40.0
AQUIFERS
ALLUVIUM
SANDSTONE
QUARTZITE
GRANITE