



Village Water Security Plan, Bhagwanpur Kamla

Gram Panchayat - Bhagwanpur Kamla

(Block Ujiarpur, District Samastipur)

Bihar

Plan prepared by

Bhagwanpur Kamla Gram Panchayat, July 2019

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Village Water Security Plan Bhagwanpur Kamla



July 2019

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I. GRAM PANCHAYAT APPROVAL OF THE PLAN

I. GRAM PANCHAYAT APPROVAL OF THE PLAN

1. पुरिया

2. वसुदेव लाल, वार्ड सदस्य, वार्ड नं- 9 - वसुदेव लाल

3. दीपक कुमार वार्ड सदस्य वार्ड नं- 14 दीपक कुमार

4. विभा कुमारी - वार्ड सदस्य वार्ड नं- 11 - विभा कुमारी

5. जयनारायण सिंह - वार्ड सदस्य - 08 जयनारायण सिंह

6. रंजु देवी वार्ड सदस्य - वार्ड नं- 10 - रंजु देवी

श्रीमान
(निर्मला सुमन)
मुखिया
ग्राम पंचायत, पंचायत समिति, बल्लभपुर
बल्लभपुर, अजमेर जिला - 305001

II. BACKGROUND

The National Rural Drinking Water Programme prescribes the preparation of village water security plans for safeguarding the sustainability of drinking water services in villages. This water security plan has been prepared by the Gram Panchayat and Ward Implementation and Management Committees of Bhagwanpur Kamla Gram Panchayat, Ujiarpur block, Samastipur District, Bihar in keeping with the guidelines issued by the Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Government of India in its Handbook for Gram Panchayats¹ to help village institutions plan, implement, operate, maintain and manage drinking water supplies and ensure its sustainability.

Technical support for water point and household surveys, dug well surveys and water regime mapping, land parcel mapping, Participatory Rural Appraisals, identification of WASH (Water, Sanitation and Hygiene) and source sustainability issues and possible water security interventions among other things was provided by the Watershed India Programme. The programme focuses on improved management and governance of water and sanitation services and water resources they depend upon. The programme is being implemented in Samastipur District in Bihar. The programme details are given in the Annex X.

III. PARTICIPATORY PLANNING PROCESS

Baseline assessments of WASH and water resources was carried out in Bhagwanpur Kamla using the following tools

- 1) Secondary data collection from existing government records
- 2) Key Informant Interviews
- 3) Survey of all public water points in the villages
- 4) A sample household survey
- 5) Focal Group Discussions(FGD) and Participatory Rural Appraisals

WASH planning - Community participation at various levels was ensured through Focal Group Discussions (FGD), participatory mapping exercises. Ward wise meetings with ward members, women and marginalised communities were held to capture water and sanitation issues and identify priorities with respect to drinking water, sanitation and hygiene services.

Source security planning - FGDs and key informant interviews helped outline historical trends in water regimes. Remote sensing and GIS (Geographic Information System) mapping technology were used to understand surface water flows and its pathways and map hydrological structures. SRTM Digital elevation Model (DEM) was used to derive surface drainage networks and understand water flow pathways. This was ground checked using mobile GIS mapping technologies.

The finer natural and man made drainages not captured through Remote Sensing data in and around village was digitised using mobile based applications, Google Earth. Remote Sensing and GIS tools were also used for water body mapping, analysis of land use and land cover changes over time. Indian Meteorological Department (IMD) data was used to understand rainfall variation.

To capture the groundwater dimensions and see its behaviour *vis a vis* geology and landform dug well inventorisation of sample wells and borewells in the village and its surrounding areas was conducted during pre and post monsoon season in 2018 after a training of Watershed India landscape implementation partners, Panchayat and ward members on its methodology. This led to mapping for geology, generation of sub-surface geo-hydrological profiles across the watersheds and

¹ https://jalshakti-ddws.gov.in/sites/default/files/GPHandbook_0.pdf

development of groundwater level maps i.e. Iso Reduced Water Level (RWL) maps for flow direction and Iso Static Water Level (SWL) maps for occurrences of groundwater at different depth.

Village meeting on 23rd January 2019 was held to conduct parcel wise land use mapping, survey of defunct borewells, calculation of water balance based on local water demand and supply with the participation of ward members, women, Village Panchayati Raj Institution head (Mukhiya), local key informants and youth. Appropriate source security interventions and sustainable land and water management activities were discussed and framed as part of this meeting.

The water source interventions, the service improvement, operation and maintenance and water safety interventions were presented, discussed and finalised in a Panchayat meeting held on 12th June 2019 (see Annex IX).

IV. WATER SECURITY PLAN COMPONENTS

This water security plan contains

- Water balance estimates
- Source sustainability interventions
- Water safety interventions
- Service improvement measures for hand pumps and piped water supply schemes

V. VILLAGE PROFILE

1. Name of the GP - Bhagwanpur Kamla

| State Code | State Name | District Code | District Name | Sub District Code | Sub District Name | CD Block Code | CD Block Name | GP Code | GP Name | Village Code | Village Name |
|------------|------------|---------------|---------------|-------------------|-------------------|---------------|---------------|---------|------------------|--------------|------------------|
| 10 | BIHAR | 221 | Samastipur | 01298 | Ujiarpur | 0286 | Ujiarpur | 0007 | Bhagwanpur Kamla | 237096 | Bhagwanpur Kamla |
| 10 | BIHAR | 221 | Samastipur | 01298 | Ujiarpur | 0286 | Ujiarpur | 0007 | Bhagwanpur Kamla | 237098 | Saidpur Zahid |

2. Total current population in the GP and number of households

Total population of GP – 15592

Total Households of GP – 2781

3. Number of villages/habitations/wards in the GP

Total number of villages in GP – 2

Total number of wards in the GP – 14

4. Names of villages in the GP

Bhagwanpur Kamla, Saidpur Jahid

5. Wards being proposed for coverage

Ward no. 8 – ward no. 14, total seven wards falling under Bhagwanpur Kamla revenue village

6. Population of these villages/wards and number of households

Total population of the village – 8753

Number of households – 1601

7. Ward wise population details

| Village | Tola Name/Ward No | Households | Population | SC population | OBC population |
|------------------|--|-------------|-------------|---------------|----------------|
| BHAGWANPUR KAMLA | SAHANI TOLA, Ward 9 | 421 | 2315 | 35 | 2280 |
| BHAGWANPUR KAMLA | DHUNIYA TOLA, Ward 10 | 12 | 127 | 0 | 127 |
| BHAGWANPUR KAMLA | RAM TOLA, Ward 10 | 53 | 398 | 398 | 0 |
| BHAGWANPUR KAMLA | PASWAN TOLA EAST, Ward 10 | 23 | 133 | 133 | 0 |
| BHAGWANPUR KAMLA | PASWAN TOLA WEST, Ward 10 | 37 | 241 | 241 | 0 |
| BHAGWANPUR KAMLA | NONFAR TOLA BHAGWANPUR KAMLA DIH, Ward 8 | 143 | 849 | 0 | 798 |
| BHAGWANPUR KAMLA | BRAHMAN TOLA NORTH, Ward 11 | 66 | 477 | 0 | 0 |
| BHAGWANPUR KAMLA | BRAHMAN TOLA SOUTH, Ward 11 | 79 | 451 | 0 | 0 |
| BHAGWANPUR KAMLA | BHAGWANPUR KAMLA Andaha Kamla, Ward 14 | 239 | 1158 | 273 | 885 |
| BHAGWANPUR KAMLA | ANDAHA KAMLA (MIDDLE) Ward 13 | 220 | 1017 | 78 | 939 |
| BHAGWANPUR KAMLA | ANDAHA KAMLA (NORTH) W.N. 12 | 308 | 1587 | 0 | 1587 |
| Total | | 1601 | 8753 | 1158 | 6616 |

Population is based on lists available at Panchayat level, Source: Mukhiya, Bhagwanpur Kamla Panchayat and ward members, 2019

8. Description of the water system

100 % sampling of all waterpoints (safe and unsafe) including hand pumps, wells, public stand posts, tap inside house was done for the village. All the water points were geolocated and photographed. The baseline figures were updated to arrive at current figures. The water point survey covers the following topics – Information about the type of water point

- Functionality and service levels
- Users per water point and water usage
- Installation, O & M of water points
- Response of service providers for O & M
- Seasonality and sufficiency of water supply
- Water quality and existing monitoring mechanisms
- Drainage and water safety
- Perceptions about water quality
- Institutions responsible for O & M
- User tariffs

| Fund utilization and management S.No. | Type of waterpoints | Number | Functional | Dysfunctional (Not working since over a year) | Not working since few days/months |
|---------------------------------------|---|-------------------------|------------|---|-----------------------------------|
| 1. | Type and number of public water source | | | | |
| | Mark II Hand pumps | 30 | 0 | 8 | 22 |
| | Nonspecific Hand pumps | 7 | 7 | | |
| | PHE6 Hand pumps | 88 | 0 | 26 | 62 |
| | Pipeline/tap (inside the house) | 2 | | | 2 |
| | Public tap/stand post | 6 | 1 | 2 | 3 |
| | Unprotected/Open Dug Well | 2 | 2 | | |
| | HH Connection | 350 | | | |
| | Overhead tanks | 2 | | | |
| | No. of tube wells pumping water in piped water supply schemes | 4 | | | |
| 2. | Families using public water source | 1024² | | | |
| 3. | Families using private water source | 577 | | | |

² These numbers are subject to change as the rural piped water schemes will get implemented

The figures are based on water point surveys of all public water points in September –October 2017. The number and status of hand pumps has been updated based on inputs from Panchayat and WIMC members in meeting held on 12th June 2019, Source: Panchayat and ward members

9. Key issues

Till June 2019, public hand pumps are the major source of drinking water in all wards except 12 and ward 13 where household piped water supply schemes catering to around 350 households have been initiated. Uniform access is being ensured in these newly established schemes. Though no major service improvement issues was perceptible for piped water schemes as these are new and still in various stages of implementation. However, newly constructed remote houses in few cases are being left out of the reach of piped schemes because of cost considerations. The main issues observed in hand pumps and the piped water schemes are listed below.

| S.No. | Issues | Units |
|-----------|--|---------------------------|
| 1. | Service improvement issues hand pumps | |
| | Newly constructed households away from main habitation have poor access to hand pumps | 20 |
| 2. | Service improvement issues household piped water scheme | |
| 3. | Water safety issues household piped water schemes | |
| | Non availability of information on water quality of new pipe water borewells at Panchayat and ward level | |
| 4. | Water safety issues hand pumps | |
| | Hand pumps and public stand posts with no platforms | 58 (55,3) |
| | Hand pumps and public stand posts with cracked/broken platforms | 36 (35,1) |
| | Fecal matter presence near water points | 63 |
| | Hand pumps and wells with toilets at a distance of less than 10 metres | 54(52, 2) |
| | No drainage around Water points | 38 |
| | Run off from water point flows in to waterbody | 6 |
| | Coliform presence | 30/74 public water points |
| | Hand pumps with Iron in excess of acceptable limits of 0.3 mg/litre | 40/74 public water points |
| 5. | Operation and maintenance issues hand pumps | |
| | Hand pumps requiring repair | 98 |
| | ➤ Broken handles of hand pumps | ➤ 14 |
| | ➤ Handle is too tight | ➤ 15 |
| | ➤ Hand pumps with damaged water pipes | ➤ 33 |

The figures are based on water point surveys of all public water points in September –October 2017. The number of hand pumps, operation and maintenance issues, platform and drainage around hand

pumps has been updated based on inputs from Panchayat and WIMC members in meeting held on 12th June 2019. Source: Panchayat and ward members

VI. SERVICE IMPROVEMENT AND O & M PLAN

1. Hand pumps operation and maintenance

| Type of service Improvement/ O & M | Units | Priority (Immediate/ This year/Next year/Later/ Not required) | Cost |
|--|---|---|--------------|
| Installation of new hand pumps for communities with poor access to water | 20 | Next year | |
| Procurement of spare parts (cylinders) to repair hand pumps | 84 | Immediate | Rs 6000/unit |
| Administrative tasks | Keeping ledgers on hand pumps, functionality and records | This year | |

2. Piped Water Supply System

This lists down the training requirement and operational activities for piped water supply connections in the wards.

| Type of Service Improvement/ O & M | Action proposed | Responsibility, and how frequently | Priority (Yes/ No) (Immediate/ /Next year) | Cost if any |
|---|---|--|---|-------------|
| Contract management capability for ward committee members | Training to ward committee members | | Immediate | |
| Operation and maintenance capability | Design terms of reference or basic service agreement for operator | Ward committee | Immediate | |
| Household Connections | Subsidizing connection cost for SC, ST or BPL households, women headed households | Ward committee | Yes | |
| Spare part management | Procurement of spare | Operator | Yes | |
| Regular operation and maintenance | Pump operation | Operator | Yes | |
| | Checking of valves | Operator | | |

| | | | | |
|--|---|--|-----|--|
| | Flow, pressure, electric panel, wiring check | Operator | | |
| Storage tank maintenance | Tank cover | Operator, Monthly | Yes | |
| | Regular cleaning of tanks | Operator, Three months | | |
| | Any other | Operator | | |
| Pipe network (leakage) | Leak detection and repair | Operator, monthly | Yes | |
| Water quality | Sanitary surveys, Sample collection for regular testing at district laboratories | ASHA/ WIMC members, Half yearly | Yes | |
| | Chlorine check | ASHA/WIMC members Weekly | Yes | |
| Customer Service | Setup a customer complaints recording system and set response time | Ward committee | Yes | |
| Accounts and Bookkeeping | Keep ledgers for operational and financial records | Ward committee, monthly | Yes | |
| Customer database, billing and collection arrangements | <ul style="list-style-type: none"> ✓ Procedures for new connection ✓ Application ✓ Billing and tariff collection ✓ Disconnection policy | Ward committee, monthly | Yes | |
| | Maintenance of record of houses with a connection Record of non-payment | Ward committee member/Operator , monthly | Yes | |

VII. WATER SAFETY PLAN

| Risks | Control measures | Units | Priority (Immediate/ This year/Next year/Later /Not required) | Costs per unit if any |
|--|---|----------------------|---|---|
| Hand pumps, wells and stand posts | | | | |
| Area around water points is muddy and poorly drained | Construction of raised platform around hand pumps and public stand posts | 58 (55,3) | Next year | Approx. Rs 3000/unit (actual estimates to be prepared) |
| | Repair of existing platforms around hand pumps and public stand posts | 36 (35,1) | Next year | Approx. Rs 500 -1000 /unit |
| | Construction of wastewater drains to take water away from water points under the <i>Har Ghar Nali Gali</i> scheme | 38 | Next year | Estimates need to be prepared |
| Livestock encroachment and animal feces | Fencing | - | Not required | |
| Risk of contamination from toilet effluents | Relocate latrines at least 10 meters away | 54 | Not possible due to space constraint | |
| Fecal matter around water points | Public awareness through in Panchayat meetings, Use of IEC signboards | Monthly Nukkad Sabha | | |
| Livestock effluents | Public awareness for construction of Nullahs by livestock owners to relocate effluent pathways away from hand pumps in consultation with livestock owners | Monthly Nukkad Sabha | | |
| Treatment systems | | | | |
| Chemical and bacteriological contamination | Monthly ward meetings with participation of ASHA workers to take stock and to ensure that | - | | |

| | | | | |
|--|---|--|--|--|
| | bleaching is done every three months by ASHA workers | | | |
| | Pre monsoon and post monsoon sample collection by WIMC members and sending to District laboratories for testing | - | | |
| Household storage and handling | | | | |
| Unclean storage container, absence of lid on storage container, no handwashing with soap | Public awareness/IEC and empower women groups to advocate for personal hygiene and proper storage and handling | Discussion on water handling, health and hygiene in monthly Nukkad Sabha | | |
| Drinking water does not meet potable standards | Household drinking water purification – IEC on household water treatment measures | Discussion on water handling, health and hygiene in monthly Nukkad Sabha | | |
| Household solid waste management | | | | |
| Risk of contamination of water points, nitrification and dumping in open water bodies | Awareness generation through proper use of IEC materials to promote waste segregation practice | - | | |
| | Training on vermicomposting | 1 | | |

VIII. SOURCE SUSTAINABILITY PLAN

1. Description of the source(s)

| Water sources | Number | Use | | | Average depth |
|---------------|---|--|------------|----------------------|---|
| | | Domestic | Irrigation | Groundwater recharge | |
| Open Wells | 43 | 12 | None | None | 25-30 feet |
| Bore wells | Estimated to be at least 150-200. One government borewell | Many new private borewells but number not estimated. | 150-200 | None | Average depth of private borewells 70-80 feet. One government |

| | | | | | |
|--------------------|---|----|---|---|-----------------------------|
| | | | | | borewell has 350 feet depth |
| Pond | 2 | No | 1 | - | |
| River | None | | | - | |
| Chaur, Maun, Jheel | 3 (Debkhal Chaur, Annapurna Chaur, Bahira Chaur) | No | 1 | - | 1-6 feet |

2. Geo-hydrological characteristics

Clayey silt soils are found from 0 to 5 feet below ground level. A layer of clay is encountered at 5-12 feet. Kankar layer is found at around 18-24 feet. A sandy layer at 25-30 feet forms the shallow aquifers.

3. Land use

| Land use | Area in ha |
|--|---------------|
| Agriculture in one season by groundwater | 68.89 |
| Agriculture in one season by surface water | 31.43 |
| Agriculture in two season by groundwater | 95.48 |
| Agriculture in three season by groundwater | 90.16 |
| Fishpond | 2.05 |
| Settlement | 29.36 |
| Road | 5.34 |
| Waterbody | 40.84 |
| Total | 363.55 |

4. Average water quality

Average TDS levels in observed dug wells was found to be mostly below 500 mg/l (Acceptable limits for drinking water) to a maximum of 1000 mg/l throughout the year.

5. Average water table

Average water levels during post monsoon season ranges from 1 to 5 m below the surface. That depletes up to 9 m during pre-monsoon season. The southern portion of the village area shows maximum depletion in water level during pre-monsoon which rises in post monsoon season i.e. up to 6 to 7 m.

To understand groundwater flow Reduced Water Level (RWL) maps have been prepared. These maps (Annex IV) reveal that the groundwater flow during pre-monsoon season is from south to north direction while during post monsoon season central portion of the village shows maximum

height of water level and it divides the groundwater flows in two opposite directions. This indicates central portion of the village acts as sub surface ridge line for groundwater and therefore, this area can be considered as recharge area for groundwater.

6. Water balance

Water demand estimation has been done using area cultivated under different crops in the current year and domestic water consumption. Rainfall and run off estimates were used to calculate water supply.

Water balance of the village is negative (-1.937) and this calls for employing water efficient irrigation techniques, less intensive agriculture, suitable water conservation and recharge measures and preservation of existing wetlands.

| | Annual Water balance estimation for Bhagwanpur Kamla village³ | |
|---------------------------|---|-----------------|
| Annual water demand (MCM) | Agricultural (Based on gross sown area of different crops) | 3.079 to 5.452 |
| | Domestic (@ 70 litres per capita/day) | 0.224 |
| Annual water supply (MCM) | Surface | 3.739 |
| | Groundwater | Not calculated |
| Water balance (MCM) | | 0.437 to -1.937 |

7. Problems with source sustainability and strategy

Depletion of shallow aquifers and lowering of water tables was found to be a major issue in the village. This is a major factor responsible for non-functionality of water points. The underlying factor for this is loss of wetlands that stored water and aided in groundwater recharge as a result of conversion for settlement or permanent agriculture.

The area of the Annapurna and Bahira Chaur is mostly privately owned. Constructions are taking place in the Chaur area. Saving further development in Chaur area and its rejuvenation would require consensus building with land owners.

Based on groundwater flow behavior the village area has been categorized into three zones (01) Recharge areas (02) highly depleted area and (03) Discharge areas. It is important to undertake the following measures with respect to the zone characteristics.

- Recharge area - Recharge measures and judicious use
- Discharge area - Water sharing and conservation technologies
- Depleting Area - Use of groundwater based on amount of recharge. Promote conjunctive use strong groundwater use protocols

³ Note: The water balance estimation is subject to refinement after taking into consideration the groundwater component and also riverine inflows. Livestock water requirement being a very small fraction of overall water use has not been added. However the estimates here roughly capture the water balance situation

8. Water Source Plan

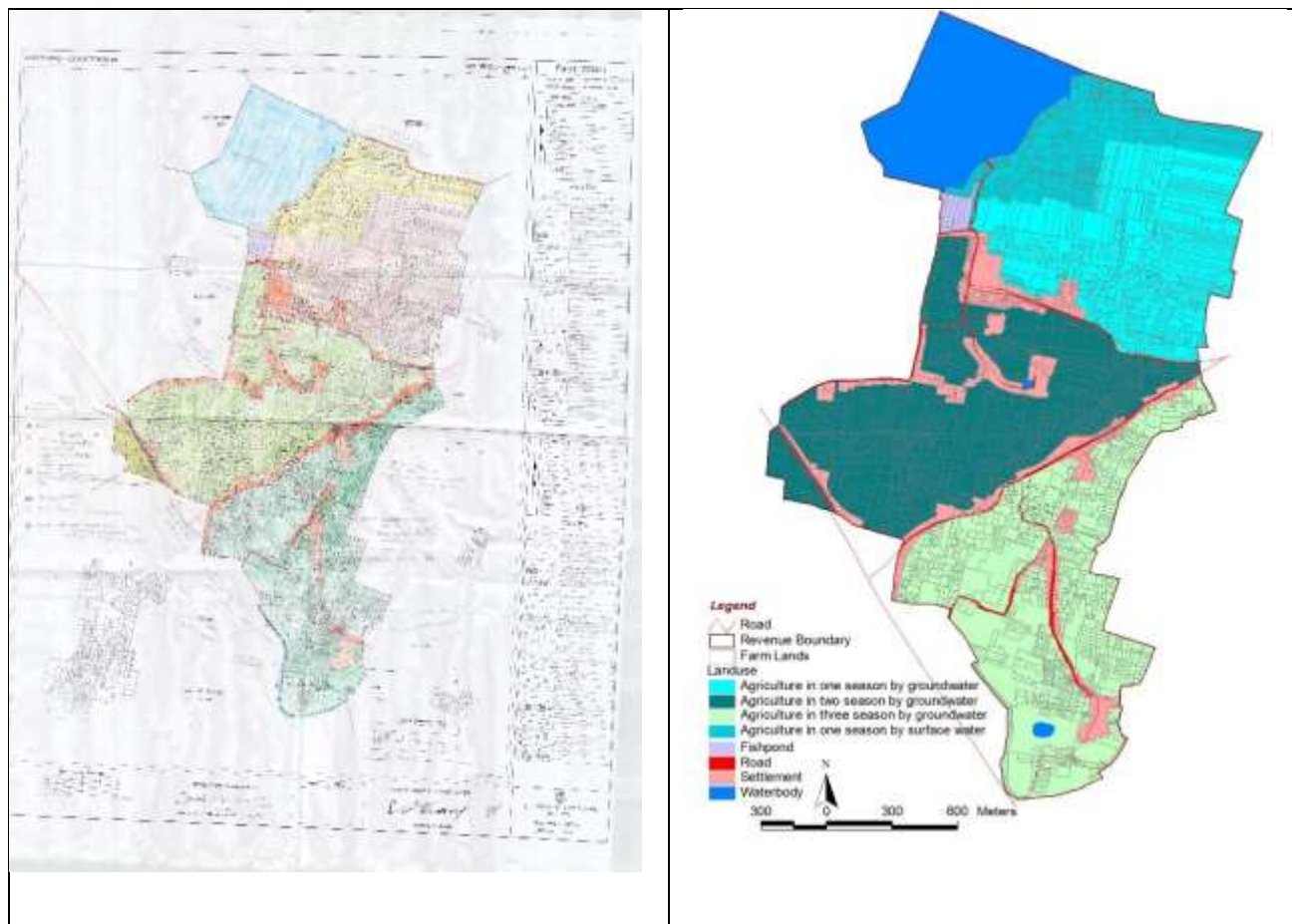
Accordingly the following strategies have been proposed for water management in the village

| S No. | Sustainability strategies | Units | Priority (Immediate/ This year/Next year/Later /Not required) | Cost per unit |
|--|---|-------|---|---------------|
| Improvement of surface water storage | | | | |
| 1. | Rejuvenation of Saiba Pokhar as water storage structure | 1 | This year but subject to availability of funds | |
| 2. | Monthly awareness meetings through Nukkad Sabah for maintenance of water channels in the village and removal of encroachments/obstructions to water flow | | This year subject to availability of funds | |
| 3. | Awareness meetings through Nukkad Sabah for conservation of and rejuvenation of water regimes in Annapurna chaur and Bahira Chaur by maintaining connectivity with village channels | | This year | |
| 4. | Training on agroforestry practices for maintenance of buffer zone around water bodies for soil conservation | 1 | Next year | |
| Groundwater recharge in recharge zone | | | | |
| 1. | Demonstration on conversion of borewells in to recharge structures | 1 | Immediate | |
| 2. | Awareness meetings to promote uptake by borewell owners Conversion of abandoned borewells into recharge borewells | | This year | |
| 3. | Training on use of dug wells in to recharge structures | 1 | This year to next year | |
| 4. | Use of dug wells as recharge structures <ul style="list-style-type: none"> ✓ Cleaning of wells ✓ Cover the dug wells ✓ Construction of roof water harvesting structures and diverting the flows to dugwells | - | This year to next year subject to availability of funds | |

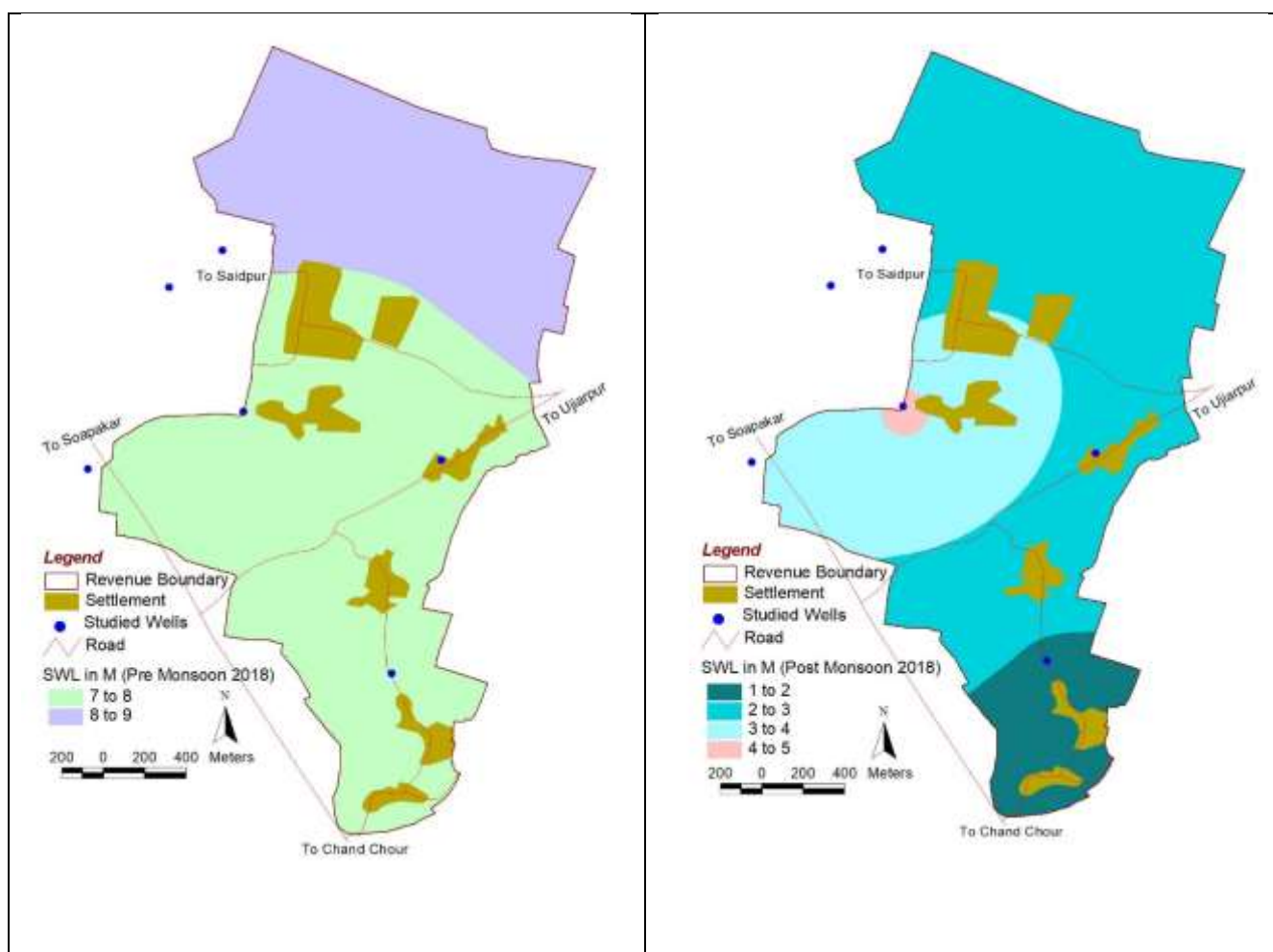
| Water conservation in farming practices | | | | |
|---|--|---|-----------|--|
| 1. | Trainings to facilitate uptake of water conserving irrigation practices such as micro irrigation methods | - | This year | |
| 2. | Awareness generation through Nukkad Sabha for promoting conjunctive use of groundwater and surface water for agriculture | | Yes | |
| 3. | Awareness generation through Nukkad Sabha for promoting water demand side management measures | | Yes | |
| 4. | Knowledge dissemination through IEC on less water intensive crops | | This year | |
| Monitoring of water regimes | | | | |
| 1. | Monitoring of water levels and water quality in dugwells through survey in pre and post monsoon season | | Next year | |
| 2. | Training on mapping and monitoring of water bodies – including permanent and seasonal extent of water bodies (ponds and chaur area), water levels, water usage etc | | Next year | |
| 3. | Maintaining village level records on status of water sources integrating inputs from dugwell surveys and wetland mapping that gets updated annually | - | Next year | |



Land use map of Bhagwanpur Kamla village



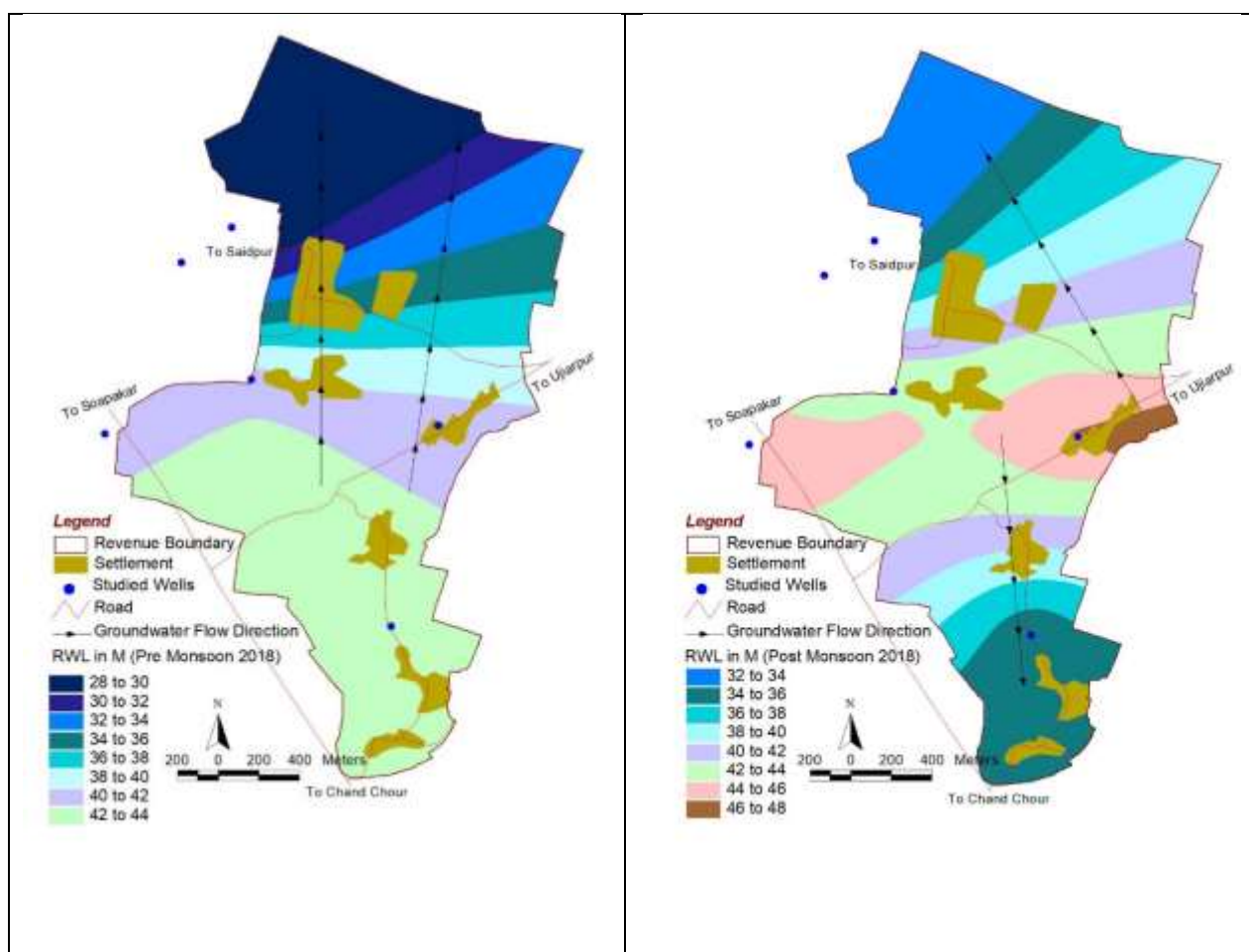
Map showing Static Water Levels during (A) Pre-monsoon season and (B) post monsoon season in village Bhagwanpur Kamla during year 2018



A

B

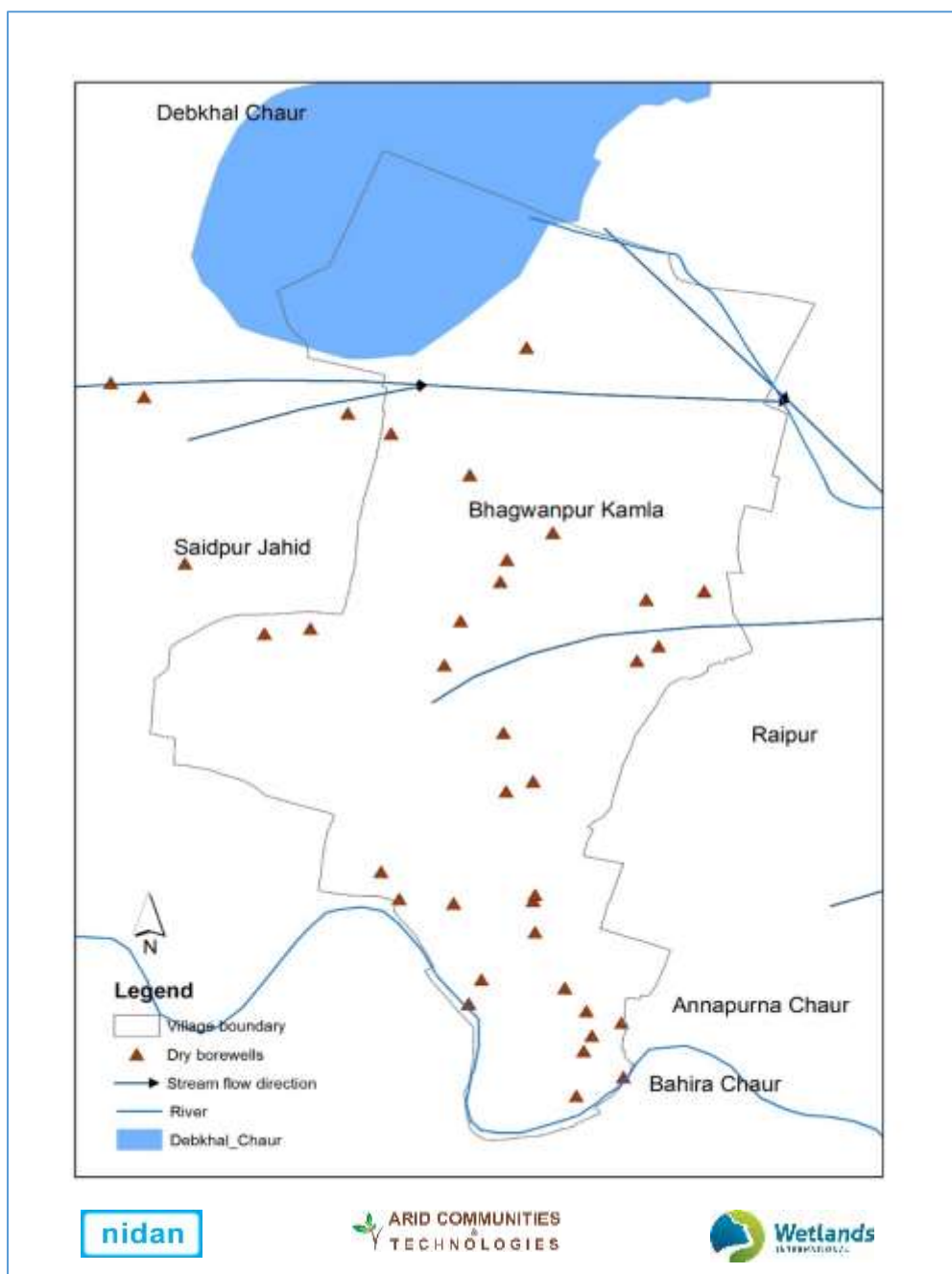
Map showing Iso Reduced Water Level Zones during (A) Pre-monsoon Season and (B) Post Monsoon Season in Village Bhagwanpur Kamla during year 2018 - arrows show direction of groundwater flows



A

B

Map showing surface drainage pattern derived from satellite data and position of permanently dry or seasonally dry borewells in and around Bhagwanpur Kamla



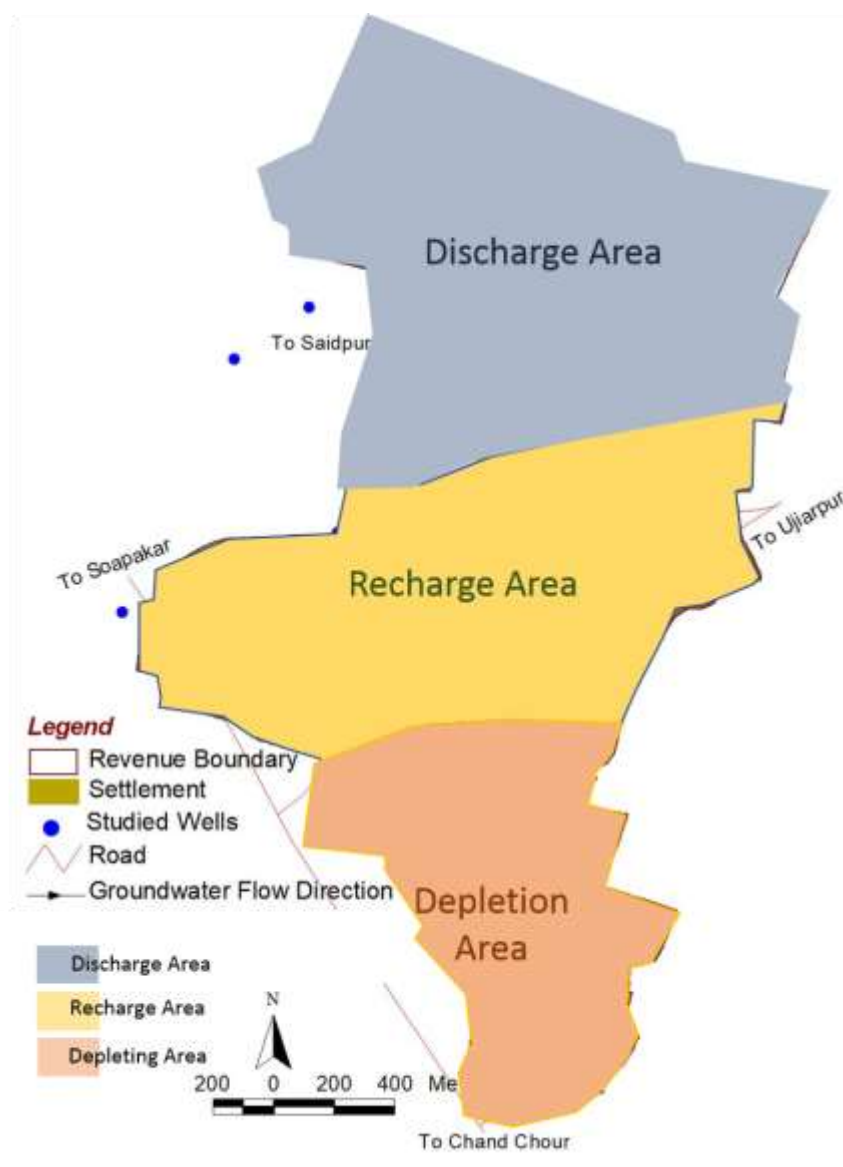
Annex VI

List of wells and seasonally/permanently dry private borewells in and around Bhagwanpur Kamla village for possible conversion to recharge borewells after consultation with owners

| Name owner | Latitude | Longitude | Ward No. | Type of borewell source | Depth of borewell (feet) |
|-------------------------|-----------------|------------------|-----------------|--------------------------------|---------------------------------|
| Chalitar Mahto | 25.768 | 85.791 | 12 | Borewell | 80 |
| Arun Singh | 25.769 | 85.787 | 9 | Borewell | 110 |
| Manoj Singh | 25.769 | 85.785 | 11 | Borewell | 70 |
| Pramod Singh | 25.768 | 85.785 | 11 | Well | 25 |
| Jaynath Singh | 25.767 | 85.784 | 11 | Well | 30 |
| Lalan Singh | 25.765 | 85.783 | 11 | Borewell | 60-70 |
| Sanjiv Kumar Singh | 25.763 | 85.799 | 11 | Borewell | 60-70 |
| Nand Kishor Singh | 25.766 | 85.778 | 10 | Borewell | 70-80 |
| Bhola Prasad Sah | 25.766 | 85.779 | 10 | Borewell | 70-75 |
| Kushi Manto | 25.766 | 85.79 | 12 | well | 30-35 |
| Kushi Manto | 25.767 | 85.79 | 12 | Borewell | 90-95 |
| Dr. Chaitar Manto | 25.765 | 85.789 | 12 | Well | 35-40 |
| Uday Shankar | 25.761 | 85.786 | 13 | Borewell | 80-85 |
| Rajendra Prasad | 25.761 | 85.785 | 13 | Well | 30-35 |
| Ranjit Manto | 25.757 | 85.786 | 13 | Borewell | 100-110 |
| Vishnath Manto | 25.754 | 85.788 | 14 | Well | 60-65 |
| Chalitar Thakur | 25.753 | 85.788 | 14 | Well | 25-30 |
| Kailash Bhandari | 25.753 | 85.788 | 14 | Well | 45-50 |
| Adv. Pradeep Kumar | 25.753 | 85.789 | 14 | Well | 30-35 |
| Thakurbari Campus | 25.755 | 85.787 | 13 | Well | 30 |
| Vinod Mahto | 25.751 | 85.788 | 14 | Well | 23 |
| Sogarath Mahto | 25.756 | 85.786 | 13 | Borewell | 70-80 |
| Sarvan Mahto | 25.758 | 85.786 | 13 | Borewell | 70-80 |
| Upendra Mahto | 25.757 | 85.784 | 13 | Borewell | 70-75 |
| Sogarath Mahto | 25.757 | 85.782 | 13 | Borewell | 70-80 |
| Tejnarayan Mahto | 25.758 | 85.782 | 13 | Borewell | 70-75 |
| Harish Chand Mahto | 25.755 | 85.785 | 13 | Borewell | 60-65 |
| Arun Mahto | 25.754 | 85.784 | 13 | Borewell | 60-65 |
| Kaplishwar Prasad Singh | 25.752 | 85.789 | 14 | Borewell | 120 |

| | | | | | |
|------------------------|--------|--------|----|----------|-------|
| Sri Nivas Prasad Singh | 25.771 | 85.784 | 8 | Borewell | 110 |
| Sharigram Singh | 25.776 | 85.786 | 9 | Borewell | 80 |
| Rajesh Singh | 25.773 | 85.782 | 5 | Borewell | 60 |
| Mintu Singh | 25.773 | 85.78 | 5 | Borewell | 80-90 |
| Kailash Sahni | 25.774 | 85.774 | 5 | Borewell | 80-90 |
| Lalu Sahni | 25.774 | 85.773 | 5 | Borewell | 80 |
| Ansharul Haq | 25.768 | 85.775 | 4 | Borewell | 80-90 |
| Ashish Singh | 25.763 | 85.785 | 12 | Borewell | 70-75 |

Map showing zone wise groundwater management strategies for Bhagwanpur Kamla



Annex VIII.

List of village representatives attending meeting for land use mapping held on 23 January 2019 in Bhagwanpur Kamla

| Sl. No. | Name | Designation | Ward No. |
|---------|------------------|------------------|----------|
| 1. | Nirmala Suman | Mukhiya | |
| 2. | Hemandra Pandit | Community leader | |
| 3. | Subhash Singh | Farmer | 1 |
| 4. | Sushil Paswan | Ward Member | 2 |
| 5. | Siya Lal Sahani | Ward Member | 3 |
| 6. | Munnilal Sah | Ward Member | 4 |
| 7. | Ramdev Sah | Ward Member | 5 |
| 8. | Batoran Sahani | Ward Member | 6 |
| 9. | Shashikant Rajak | Ward Member | 7 |
| 10. | Deepak Kumar | Ward Member | 8 |
| 11. | Nathuni Paswan | Ward Member | 9 |
| 12. | Sanjeet Ram | Ward Member | 10 |

Annex IX:

List of village representatives attending meeting on water security planning held on 12 June,2019 in Bhagwanpur Kamla

| Sl. No. | Name | Designation | Ward No. |
|---------|---------------------|------------------|----------|
| 1. | Jai Narayan Singh | Ward member | 8 |
| 2. | Subhash Kumar Singh | Farmer | 11 |
| 3. | Batoran Sahni | Ward member | 9 |
| 5. | Deepak Kumar | Ward member | 14 |
| 6. | Sushil Paswan | Ward member | 7 |
| 7. | Rekha Devi | Ward member | 1 |
| 8. | Sushil Paswan | Ward member | 7 |
| 9. | Krishna Devi | Ward member | 3 |
| 10. | Ramdev Sah | Ward member | 3 |
| 14. | Hemendra Pandit | Community leader | |
| 15. | Ranju Devi | Ward member | 10 |
| 16. | Nirmala Suman | Mukhiya | |

This water security plan has been prepared by the Bhagwanpur Kamla Gram Panchayat and village communities with the support of Wetlands International South Asia, Nidan and Arid Communities and Technologies (ACT) under the Watershed India programme.

Watershed India is a strategic partnership programme of the Dutch Ministry of Foreign Affairs, Wetlands International, IRC and Akvo. The programme is being implemented in Debkhal Chaur wetland basin in Samastipur District, Bihar in partnership with Nidan and in Tampara wetland basin, Ganjam District, Odisha in partnership with Gram Utthan.

Working through pilot locations where water resources are scarce or contested and where environmental management is at the core of the WASH sustainability challenge, the programme aims to deliver improvements in the governance and management of water, sanitation and hygiene services and ensuring sustainability of water resource they depend on. More about the programme can be accessed from the website <https://watershed.nl/>.

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