MANUAL
FOR
FIRST CENSUS OF SPRINGS

[Reference Year: 2023-24]
(01.07.2023-30.06.2024)

GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
MINOR IRRIGATION (STATISTICS) WING

FOREWORD

Springs are the source of water from generations to millions of inhabitants in the mountain ranges across the country. Proximity of springs was the first and foremost criteria for settlement of villages and hamlets in the mountainous areas and hence local populace have been solely dependent on these springs for theirs daily water needs. Local people have developed traditional techniques and wisdom to manage these springs in olden days. As villages and hamlets expanded over time, the catchment areas of these springs decreased, leading to a subsequent reduction in discharge and degradation of the spring water quality. The rate of diminishing discharge and degrading quality of springs water have also been exacerbated by the changing climate which is significantly higher in mountainous areas than rest of the country.

In 2018 NITI Aayogacknowledged the importance of springs and took cognizance for the rapid drying/diminishing of these springs across the country particularly in Indian Himalayan Region (IHR) and constituted a working group on "Inventory and revival of springs in the Himalayas for water Security".The report revealed that the available secondary data on springs underestimate the actual counts of springs and hence the report emphasized on the urgent need of spring mapping and creation of Web-enabled database/web portal on which springs can be mapped/tagged. This available database would be immensely useful to formulate effective policies, plannings and schemes for springshed management in the country in changing climate.

The Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti has been conducting census of Minor Irrigation (MI) SINCE 1986-87. The census is being conducted under the centrally sponsored scheme' Irrigartion Census' which is a standalone component under the Umbrella Scheme- Pradhan MantriKrishiSinchaiYojana and Other Schemes. Six MI census have been conducted so far Ministry had undertaken First Census of Water Bodies in convergence with the 6th MI Census with reference year 2017-18.

In view of the importance of springs in sustaining the water demand of a large portion of the country (about 15%), I am happy to inform that DoWR, RD & GR is undertaking the 1stSpring Census along with the forthcoming 7thMI and 2ndWater bodies censuses in the country. The census will be conducted entirely in digital mode, utilizing a smartphone app,

thereby eliminating the use of paper and resulting in significant savings in resources, including time and cost.

This document will help the field level functionaries/ primary workers/enumerators in efficiently collecting the data on ground. This will serve as a guide on the concepts, definitions and procedure to be uniformly followed by all States/UTs during the field work.I hope that the concerned officials involved in the conduct of census will make full use of this document for collection of data of 1st Spring Census of the country.

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CHAPTER ONE:

INTRODUCTION

1.0 INTRODUCTION

1.1 Springs, manifestation of groundwater on the surface, are the source of water supply to millions of inhabitants in the mountain ranges across the country. According to the working group report of NITI Aayog, a gross estimate of nearly 200 million Indians depend on spring water across the country – mainly in the Indian Himalayan Region, Western Ghats (Sahyadri mountain range, traversing the states of Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu), Eastern Ghats (Northern Odisha, Andhra Pradesh, and Tamilnadu) and Central India (Satpura and Vindhyas mountains) – which implies that more than 15% of India's population relies on spring water to meet their water demands.

1.2 In mountainous areas, villages/hamlets are located at local ridges for strategical and safety point of view, these are the zones where the rivers flow in deep valleys and the glaciers are higher up in the mountains, therefore, drawing water from these two sources is not economically viable. In such situation local springs are the only source for meeting the drinking, domestic, and agricultural water needs for both rural and urban communities. In addition to this, these springs drain into and sustain several rivers in the lean season and there is hardly any river that is not fed by the springs. These water pygmies play vital role in solving water scarcity in mountainous regions of India, when even large rivers fail to deliver.

1.3 In view of the importance of springs, need for conducting spring mapping was stressed by the NITI Aayog Working group-I report on "Inventory and Revival of Springs in the Himalayas for Water Security" released in 2018. Report took the stock of magnitude of drying of springs in Indian Himalayan Region (IHR) and found that half of the perennial springs have already dried up or have become seasonal resulting in acute water shortages across hundreds of Himalayan villages. The report revealed that the available secondary data on springs underestimate the actual count of spring and hence the report emphasized on the urgent need of spring mapping and creation of Web-enabled database/web portal on which springs can be mapped/tagged by all states, Govt. Depts., R&D Institutions and NGOs working on springs.

1.4 Further 23rd report of Parliamentary Standing Committee on Water Resources (2022-23) urged upon the DoWR, RD&GR to take necessary steps for the revival of springs in the Himalayan region as millions of people depend only on Springs for their drinking, domestic, and agricultural water needs. DoWR, RD&GR constituted a steering committee on "Springshed Mapping of Indian Himalayan Region (IHR) Including Mountainous Regions of the Country and Springshed based Watershed Management Plan" to expedite the springshedmanagement work in the country. Committee ascertain the adequacy and gaps in expediting the springshed management in the country and found that there is no systematic mechanism, uniform format and techniques for spring and springshed mapping in the country which is the first and foremost hurdle for expediting the springshed management in the country. Therefore, committee formulated a Resource Book on "SpringshedManagement in the Mountainous Regions of India" which act as technical document to guide the agencies/depts for spring and springshed mapping in the country.

1.5 In view of the importance of springs in sustaining the water security in the mountainous parts of the country, DoWR, RD & GR took decision to start the 1st spring census of the countryalong with the conduct of 7th MI Census and 2nd Census of Water Bodies under the centrally sponsored scheme 'Irrigation Census'.

CHAPTER TWO:

CONCEPTS AND DEFINITIONS FOR 1st CENSUS OF SPRINGS

2.0 FIRST CENSUS OF SPRINGS

2.1 DEFINITION OF SPRING TO BE USED:

A spring is a focused discharge of naturally occurring groundwater on the Earth's surface. In general springs can be seen either as a free flow or seep spring.

Fig.1 Freeflowspring

Fig.2 SeepSpring

For spring census, following conditions need to be considered during springs mapping,

(1) Not all naturally occurring groundwater flows with diffuse discharge can be classified as springs. For example:

- **Seepage:** *This refers to cases where a discrete discharge point cannot be determined, such as the oozing of groundwater from the banks of a river, lake, or stream, resulting in the creation of a wet and marshy area.*

Fig. 3 Water logging due to discreate discharge (seepage, not spring)

- **Wetlands:** *In areas where the water table is near the surface, groundwater discharges diffusely, giving rise to swampy or marshy ecosystems that support unique plant and animal life.*

Fig. 4 Swampy wetland (not spring)

(2) Spring census should not include ponds and artificial situations, viz. dug wells, artesian wells, and groundwater that appears in excavations.

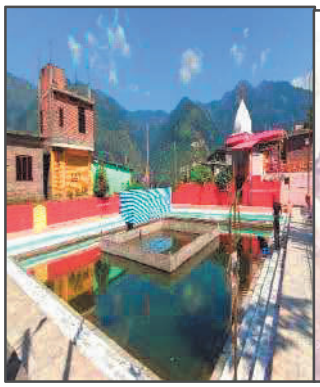

Fig.5 Pond (not spring) **Fig.6**Dug well (not spring)**Fig.7**Artesian well (not spring)

(3) Natural springs that have pipes installed at their outlets to direct/guide their flow should be included in the mapping of springs and should not be mistaken for piped water supplies.

Fig. 8 Springs with piped outlet

However, the following should be excluded:

- *Pipes connected to artificial tanks and pumping schemes.*
- *Pipes drawing water from adjoining or nearby streams, rivulets, or nallahs.*

(4) In addition to free-flowing springs, which are characterized by concentrated flow, there are small and localized groundwater seeps that occur through permeable sediments or fractures in rock, resulting in the formation of pools of water known by different names in local areas, viz. ***Naula*** in Uttarkhand, ***Baowli***in Himachal Pradesh, and ***Bowli/Baowri*** in Jammu & Kashmir should also be covered in the spring census. It is important not to confuse these with other larger structures like step wells during spring mapping (e.g., Agrasen Ki Baoli in New Delhi, Rani kiVav in Gujarat, etc.).

Fig. 9 Bowli/Baowri in Udhampur district of J&K

2.2 LOCAL NOMENCLATURE OF SPRINGS ACROSS DIFFERENT STATES OF INDIA

There exists a notable variation in the local nomenclature used to refer to springs across different regions of India. Consequently, it is advisable to incorporate the specific vernacular designations utilized by the local populace when conducting spring mapping exercises. A 'non-exhaustive' list of popular nomenclatures for springs in different regions of India is provided below:

Table 1. Local nomenclature of springs across different states of India

S. No.	State	Local nomenclature of spring
1	Arunachal Pradesh	Hikur by the people of Adi tribe, and Sadang by the Nyishi tribe
2	Assam	Uuh
3	Himachal Pradesh	Panihar, Nadu, Baori, Chharedu
4	Jammu and Kashmir	Chasma, Naag, Baowli
5	Karnataka	Neerinabugge, Karanjineeru, Oravu
6	Kerala	Jaladhara, Oat vellum
7	Ladhakh	Chhumik
8	Maharastra	Jara or Zara
9	Manipuri	Ephut by Meitei people
10	Meghalaya	Chimik by Garo tribes
11	Mizoram	Sih
12	Nagaland	Dzuluo in Kohima area, Azukikhi in Zunheboto area, Dzuriin Phek area, and Tchulan in Wokha area
13	Sikkim	Dhara, UmreykoPani (Nepali)
14	Tripura	Hathai-ni by the indigenous people, and Jharna by Bengali people

15	Uttarakhand	Naula, Panera in Kumaon region, and Dhara, Panera in Garhwal region

CHAPTER THREE:

METHODOLOGY FOR CONDUCTING 1ST SPRING CENSUS

3.0 METHODOLOGY:

The 1st Spring census willbe conducted entirely digitally through a dedicated smartphone app, eliminating the paper-based data collection process. The app will facilitate the entire process, encompassing data entry, scrutiny, and related procedures, in a streamlined and paperless manner.The data entered through mobile app by the enumerator during field work can be viewed and validated in the online portal developed by NIC. States/ UTs should make efforts to complete the field work/data entry and validation work in six months' time. Since, the survey will not involve any paper-based data collection, District Nodal Officer (DNO) as well as Block Level Officer (BLO) will be required to cross-examine the data being submitted by the enumerator on weekly basis to avoid discrepancies in the submitted records. To do so, admin level access shall be provided to the DNOs which can also be utilized to create new users for conducting the survey, keeping the track of their progress and monitoring the quality of work. State Nodal Officer (SNO) shall verify and follow up the overall progress through monthly meetings with the DNOs. The validated data would again be examined at the Central Level before generation of final table.

The Spring Census data would be collected through canvassing the enumeration schedule for the village by designated officials. Enumerator may also be required to interact with residents/users to fill few of the fields of schedule which may require local experience.

While the field work is going on: supervision and checking is required to be done by:

i. Block level officers
ii. District level officers
iii. State level officers as per the norms prescribed.

Block level officers and District level officers would require to randomly verify the Springs captured in the census for ensuring better quality of data as detailed in Para 3.4. Apart from officials from the Nodal Department, the central team would also visit the state and check the quality of data.

3.1 Implementation Guidelines:

3.1.1 A Steering Committee is to be formed in each State with Secretary of the Nodal Department for conduct of MI and water body census as Chairman and members from the CWC, State Departments of Revenue, Irrigation, Water Resources,

Panchayati Raj, State Planning, DES, Rural Development and State head of NSSO (FOD). A technical Sub Committee will be formed under the Chairmanship of Regional Chief Engineer of CWC in charge of the State to provide technical inputs and guide the State Nodal Department during the Census operations. A representative from regional office of CGWB and State Water Informatics Centre (SWIC) wherever established will also be a member of this Committee. Considering the inclusion of Census of Springs, the Chairman of the committee may also co-opt representatives from other concerned State Departments like Ground Water Department, Geological Department, Soil & Water Conservation Department etc. Further, it may be ensured that representatives from Nodal Departments for census of Major and Medium Irrigation Projects and Census of Springs should be there in Steering Committee as well as in Technical Sub Committee.

3.1.2 Existing training module is to be standardised and put in Audio-Visual form in English/Hindi for uniformity in imparting training.

3.1.3 Publicity campaign at State / district level shall be under taken. Funds provided under contingency to be used for advertisement through posters / Media/ Announcement locally through hand held loudspeaker just a week before Census is to start in the villages and Census Commissioners have to ensure timely execution of the same.

Note: ***Only one Steering Committee shall be constituted for all the 04 censuses namely, 7th MI census, 2nd Water body census, 1st census of MMI projects and 1st census of Springs. Similarly, there will be only one Technical Sub Committee for all these censuses.***

3.2 TRAININGPROGRAMMEFORDATACOLLECTION:

3.2.1. To ensure quality of data collection, a training-cum-Workshop for the Trainers will beorganized at the Central level in New Delhi in which officers from each State/UT shallparticipate. Scientists from National Institute of Hydrology (NIH), and Central Groundwater Board (CGWB) will impart training on the technical aspect of spring census. An officer ofNIC attached with D/o Water Resources, River Development & Ganga Rejuvenation wouldalso participate in these Workshops to discuss issues related to Census data processing. Regional Training Workshops for the trainers will be organized by the Centre inassociation with identified State nodal agencies

for all the States/UTs in some region. In theRegional Training Workshops, the Nodal officer along with the concerned officialsof each State/UT shall participate. All of these officers would be trained astrainers.TheywouldimpartnextlevelStatetrainingstobeorganizedbytheStateattheSta te/District Headquarters in which the district level officers/ Block Level Officers andenumeratorswouldbetrained.ArepresentativefromtheCentrecanparticipateasanob server in some such State level trainings. In addition, the district level officers from all thedistricts, State level NIC officers, State Ground Water Board officers, officers from regionaloffices of Central Water Commission, SASA/DES Head and DDG, FOD, NSSO of therespective State shall be requested to attend the State trainings. Thus, there would be 7 to 8participantsinadditiontothenumberofdistrictofficersfromeachStateinsuchtraining/w orkshops.Thedetailsofthemethodologyadoptedfortheconsus, use of mobile application, statisticalinstrumentslikeschedules,instructionmanual,conceptsanddefinitions,etc.w ouldbediscussed thoroughly and necessary clarifications shall be given.Each State will intimate thedistrict level Training schedule in advance to the Centre so that a representative from theCentrecanparticipateinsome of these trainings.

3.3 FIELDWORK:

3.3.1 The 1st Spring Census will be conducted under the overall charge of Nodal officer nominated from the Nodal department of State / UT concerned. The Nodal officer should ensure complete coverage of Springs in his State/UT. The fieldwork will either be undertaken by the Nodal department itself or entrusted/ outsourced to some other agencies which the State/UT Government considers fit keeping in view infrastructure available with it under intimation to this office. However, for the entire Census operation, Nodal Officer of the State/ UT shall be the pivotal point as far as Government of India is concerned and would be entitled to draw the honorarium for the State level officer. The primary work of collection of data will be carried out by the enumerators both in rural and urban areas. They may be village level workers or village accountants or Lekhpals or Patwaries or any other official designated by the State/UT Government in rural and urban area. The work of supervision will be entrusted to immediate supervisor which may be the Block Level officer. The overall

quality of field work is to be monitored by Block/District level/ State officers, who in order to ensure the correctness of data, will conduct frequent site visits of the springs and check the entries made by primary enumerators.

3.3.2 The primary enumerator should visit and cover all his/her jurisdiction area to ensure complete coverage. He/She should also interact with village officials /knowledgeable people/ water use association/ local residents to correctly enter the relevant fields of the schedule. The purpose of the Census should be explained to the local users/ residents to win over their confidence in obtaining the specific information. After filling up the schedules in the mobile application, the enumerators are required to submit the completed schedules to the supervisor for scrutiny.

3.4 Sample Check:

3.4.1 The block level officer will visit at least 10% or 50 springs, whichever is maximum, in order to ensure the correctness of data collected. While doing so it is to be ensured that springs are not clustered and are spread at substantial far distance. On completion of the scrutiny and after the field visits; block level officer shall fill up the supervisor's report form and submit it to the district level officer concerned (with copy to State Nodal Office). At least 10% of the total springs or 50 schedules, whichever is maximum, spread across all the blocks shall be selected at random and scrutinized by the district level officer. After the completion of inspection of the field work and scrutiny of the schedules; the supervisor's report form is to be filled up by the district level officer and submitted to the State Nodal office with a copy to the Centre. The Monthly Progress Reports on the Census sent by the State should adequately reflect scrutiny /inspection details sent by Block/ District level officer along with field work. Regarding processing of data, the web based online software developed by central NIC shall be used for validation, tabulation etc.

3.4.2 It has to be ensured that the photograph of spring is also captured by enumerator by smart phone along with its latitude and longitude. The photograph will be uploaded by enumerator using the mobile application being used for the spring census.

3.4.3 Frequent inspections and sample checks will also be conducted by officers from the State and Central team comprising of officials from MI (Stat) and National Institute of Hydrology (NIH) from D/o of Water Resources, RD & GR.

3.5 COMPUTERISATION OF CENSUS DATA:

3.5.1 NIC in consultation with NIH willprovide the appropriate online software/ App for the censuses and extend technical support and training in similar Regional Data Processing Workshops to be organized by the Ministry in association with the host States.

3.5.2 This will be followed by State level trainings to be organized by the State Census Commissioner for MI and WB Census. The user ID and password for accessing the online portal will be provided to the State nodal officers by the time, the data collection work starts in the field. Online data entry, validation etc. will be done by States/UTs.

3.5.3 The Census data entered in the online portal by the States/UTs would again be scrutinized at the Central level and observations/ queries thereon would be referred to States/ UTs for possible corrections/clarification. On-line tables would be generated on the portal on the basis of data fed by States/ UTs. The on line tables generated through portal shall be utilised for compiling National Level Report. The State Government shall use the corrected data as available on the online portal for generating micro level tables as per their requirement.

3.6 SUBMISSION OF MONTHLY PROGRESS REPORT

3.6.1 The State/UT Governments will mail Monthly Progress Report for 1st spring census in the prescribed format to the Ministry. Besides that, real time progress of data entry and validation can be accessed online through the software provided by the Ministry. This would help in monitoring the progress of Census work, taking remedial measures wherever required. The States/ UTs may also devise their own mechanism to monitor the flow of work regularly. In addition to the Monthly progress report, a report regarding completion of field work from all villages/towns is to be submitted as per the prescribed format to ensure completion of field work at enumerator/supervisor/block and district level.

3.7 TENTATIVE SCHEDULE OF THE CENSUSES:

1. Release of Central grant by the Centre : As and when demanded by States/UTs
2. All India Training Workshop : August 2023

3.	Pilot testing of mobile app	:	September 2024
4.	06 Regional Training Workshops	:	November-December 2024
5.	State /District Training programmes	:	January 2025
6.	Start of field work of census on ground	:	February 2025
7.	Cleaning, validation and scrutiny of data	:	February 2025 to July 2025
8.	Examining of tables by Central Ministry	:	August 2025 to October 2025
9.	Report drafting and Publication	:	by December 2025

CHAPTER FOUR:

INSTRUCTIONS FOR USING MOBILE APPLICATION

CHAPTER FIVE:

GENERAL INSTRUCTIONS FOR FILLING SPRING CENSUS SCHEDULE

5.1 IDENTIFICATION PARTICULARS:

The name of the State/ District/ Block (Tehsil)/ Village or State/District/Town/Ward whatever applicable will be recorded with respective LGD codes.

Since spring Schedule contain information of Rural or Urban, it may be ensured that if spring is in Rural area, it has information of Tehsil and Village code and if spring is in Urban area the information relating to Urban i.e., Name of Town and their code with Ward number is reported in relevant item.

Serial number of the Spring within village/town:

The springs in a village/town should be given running serial numbers. This will serve as an identification no. of that particular springs in that village/town. While giving serial no. of the spring, serial numbers are to be given starting from 01. The serial number has to be given starting from 01 separately for spring in each village or town.

5.2 SPRING DESCRIPTION

5.2.1 Item 01:Locational Information

- Latitude, Longitude, and Altitude will be recorded in the mobile application using the inbuilt GPS of smartphone.
- To ensure the accuracy, the enumerator should avoid standing under the covered area.
- It is likely that for some reason, the smartphone may not record the Altitude information then enumerator need not worry on that and may proceed with the survey.

5.2.2 Item 02:Local Nomenclature of Spring

- Enumerator may select the appropriate local nomenclature of the spring from the dropdown list provided in the mobile app.
- If the name is not available in the dropdown list, enumerator may select the option ***'other'*** and enter the name by typing.

5.2.3 Item 03:Spring Type

- Enumerator may select the appropriate option depending upon the spring type *(refer the concepts and definition for understanding the Free flow spring and Seep spring).*

5.2.4 Item 04:Spring Nature

- Enumerator may select the appropriate option depending upon the spring nature after discussing with local residents/users who have been using the spring water for a considerable longer duration.

Perennial spring: Discharge is available throughout the year.

Seasonal spring: Discharge is available in the selected months of the year.

Dried spring: Springs which used to provide water in the past for the community, however, are at present not discharging water.

5.2.5 Item 05:Whether this is a newly emerged spring?

- Enumerator may select the appropriate option either 'Yes' or 'No' after discussing with local residents/users who have been residing in the area for a considerably longer duration.

5.2.6 Item 06:Does spring discharge muddy water in rainy season?

- Enumerator may select the appropriate option either 'Yes' or 'No' after discussing with local residents/users who have been residing in the area and using the spring water for a considerably longer duration.

5.2.7 Item 07:Cleanliness in and around the spring

- Enumerator may select the appropriate option either 'Satisfactory' or 'Unsatisfactory' after visual inspection.

5.2.8 Item 08:Spring ownership

- Enumerator may select the appropriate option either 'Public' or 'Private' after discussing with local residents/users.

5.2.9 Item 09:Whether there is any chamber/tank to collect the water?

- Enumerator may select the appropriate option either 'Yes' or 'No' depending upon the availability of chamber or tank for collecting the spring water.

Fig. Spring with storage tank

5.2.10 Item 10:Whether there is any pipe water supply from spring?

- Enumerator may select the appropriate option either 'Yes' or 'No' by inspecting the presence/absence of any pipe water supply to any village/households by drawing water from the spring.

5.2.11 Item 11:Capture three photographs for additional details

There is the provision of capturing thephotographs for additional details,

Close-up shot: It should be captured about 2 m from the spring outlet to provide a close view of the spring.

Wide-angle shot: It should be captured about 10-20 m from the spring outlet by keeping the spring in the centre to record the view of spring's surroundings.

Selfie shot: Enumerator should capture a selfie with the spring.

For the sack of clarification Close-up shot and Wide-angle shot are illustrated in the following figures.

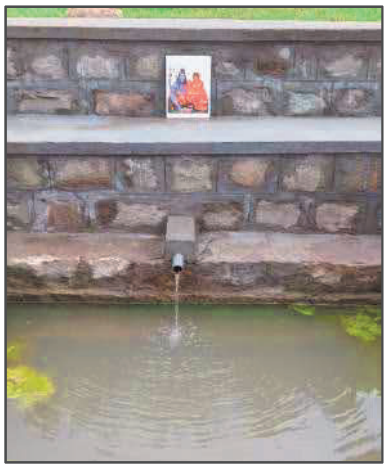

Fig. Close-up shot

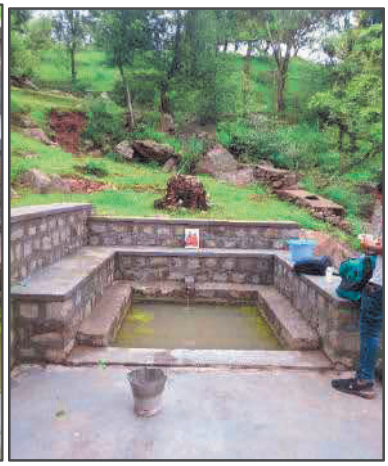

Fig. Wide angle shot

5.3 GENERAL PHYSICAL CHARACTERISTICS OF THE SPRING

5.3.1 Item 01:Whether spring discharge could be measured?

- Enumerator must ensure that the spring discharge is measured, subsequently the option 'Yes' may be selected.
- However, in some extreme cases if it is not possible to measure the discharge the enumerator may select the option 'No'.
- For free flow springs, manual discharge measurement is carried out in the following steps.
- Collect the known volume of water in a graduated bucket or water collecting cane.
- Take the average of three measurements: the volume of water collected and the time taken to collect the water.
- Calculate the spring discharge by dividing the volume by the time taken to collect the water.

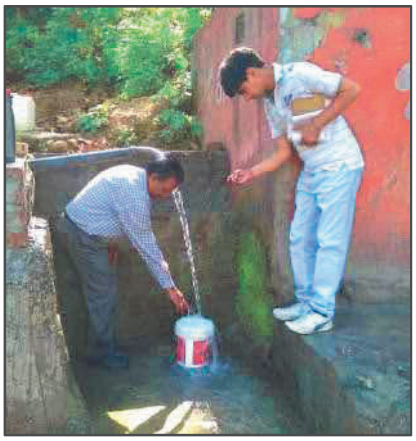

Fig. 4.1. Discharge measurement of a Free flow spring.

For seep springs, discharge measurement is carried out in the following steps.

- Mark the level of water in the chamber
- Remove a known volume of water from the chamber seep
- Record the time taken by the water to attain its previous level
- Calculate the spring discharge by dividing the volume by the time taken to collect the water.

Fig. 4.2. Discharge measurement of a Seep type spring.

5.3.2 Item 02:No. of spring outlets?

- Enumerator may enter the no. of spring outlets as there could be multiple outlets in an individual spring.
- Based upon the no. of spring outlets, respective volume of water *(in litre)* collected and corresponding time taken to collect the water should be

entered *in (min:sec)*.

- Discharge of the individual outlets will be shown automatically by the application along with the total discharge of the spring.

Fig. 13 Springs with three outlets

5.3.3 Item 03:Seasonal variability of the discharge across the year

- Spring discharge getting increased/decreased considerably (more than 100%), i.e., getting doubled or halved in some months of the year, implies 'High' seasonal variability of the spring. Otherwise the seasonal variability is 'Low'.
- Enumerator may select the appropriate option either 'High' or 'Low' after discussing with local residents/users who have been residing in the area and using the spring water for a considerable longer duration.
- The insight on seasonal variability aids in comprehending the spring's reliability as a water source throughout the year. For instance, a spring with high seasonal variability exhibits significant fluctuations in discharge magnitude across different months, whereas a spring with low seasonal variability maintains relatively consistent discharge levels throughout the year.

5.3.4 Item 04:Spring discharge trend in last 10 years

- Enumerator may select the appropriate options i.e., 'Highly decreased', 'Slightly decreased', 'No change', and 'Increase' after discussing with local residents/users who have been residing in the area and using the spring water for a considerable longer duration.

5.3.5 Item 05:Colour of spring water

- Enumerator may select the appropriate options based on the visual inspection of spring water. Generally, the pure water is 'Colorless', however, due to some impurity there may be some color.

5.3.6 Item 06:Smell/odour of spring water

- Enumerator may select the appropriate options i.e., 'Agreeable', or 'Non-

agreeable' based on the presence of any odour in the spring water.

5.3.7 Item 07:Taste of spring water

- Enumerator may select the appropriate options i.e., 'Objectionable', or 'Unobjectionable' based on the taste of spring water. In case the water has smell or color, it is advisable to make the appropriate entry after discussing with local residents/users.

5.3.8 Item 08:Temperature of spring water

- Enumerator may select the 'Hot' if the spring is 'Thermal spring', otherwise the 'Cold' option will be selected.

5.4 OTHER INFORMATION

5.4.1 Item 01:Dominant land use land cover in spring upstream

- Land use land cover in the spring upstream can be of multiple type, however, the enumerator should select the dominant type from available options in the dropdown menu i.e., Agriculture, Forest, Pasture, Shrubs, Settlement while recording the information.

5.4.2 Item 02:Land use land cover in and around spring location

- Enumerator should select the land use land cover in the spring location from available options in the dropdown menu i.e., Agriculture, Forest, Pasture, Shrubs, Settlement while recording the information.

5.4.3 Item 03:Resource threat

- Enumerator should interact with the local residents/users who have been residing in the area and using the spring water for a considerable longer duration to assess the possibility of resource threat to the sustenance of spring. Accordingly, the option 'Yes' or 'No' should be selected.

Item 03(a): Degree of threat

In case the 'Resource threat' to spring is identified, then the enumerator should record the appropriate option for 'Degree of threat' i.e., 'Low', 'Moderate', and 'High' as per the interaction with the local residents.

Item 03(b): Major stressor responsible for threat

The enumerator should try to identify the most pressing causes threatening the sustenance of spring by discussing with the local residents and select the appropriate option in the application after discussing with the local resident.

5.4.4 Item 04:Usage of spring water

- Enumerator should select the appropriate option(s), up to three, in order

of preference, for 'Usage of spring water' after discussing with local residents/users who have been residing in the area and using the spring water for a considerably longer duration.

5.4.5 Item 05:Dependent type

Enumerator may select the appropriate option after discussing with local residents/users who have been residing in the area and using the spring water for a considerably longer duration. However, in case the answer to Item III(08) is 'Hot', then the Dependent type will be auto-selected as "Not applicable".

Item 05(a): Number of dependent villages

Enumerator should enter the numerical value of number of the village(s) dependent on the spring for their daily water needs.

Item 05(b): Name of dependent villages

Enumerator should enter the name of the dependent village(s) on the spring for their daily water needs.

Item 05(c): Number of dependent households

Enumerator should enter the number of households of the village(s) dependent on the spring for their daily water needs. It is not necessary that all the households of a village may depend on the spring, as some household may have other option(s) viz., pipe water supply, hand pump, other spring, etc.

Item 05(d): Number of dependent people

Enumerator should enter the number of people dependent on the spring for their daily water needs.

5.4.6 Item 06:Dependency level

- Dependency level of a spring may be decided based on the level of extent to which local people are dependent on the springs for their daily water needs.
- If the local populace is fully dependent on the spring, enumerator should select the option 'High'. Similarly, based on the dependency level, options 'Moderate' and 'Low' may be exercised. These information should be filled by interacting with the local residents/users.

5.4.7 Item 07:Other available source of water

- Based on the availability of the other sources of water in the village, appropriate options i.e., other spring, piped supply, hand pump, dugwell, pond, none, or other may be exercised.

5.4.8 Item 08:Whether the spring has undergone any springshed/watershed management program?

- Enumerator should discuss with local people and local implementing agencies if the particular spring has been treated under any springshed

or watershed management programme?

- Notably, for last couple of years some state agencies and NGOs have been treating springs under various sprigshed/watershed management programmes.

To ensure the accuracy and relevance of this ancillary information, enumerator must actively engage with local residents and stakeholders. Interacting with the community members allows surveyors to obtain first-hand knowledge and insights about the springs and their associated aspects. This participatory approach fosters a sense of ownership among the local stakeholders and includes their valuable perspectives in the survey. Including the views and concerns of the community members is important as they possess invaluable knowledge and observations accumulated through their interactions with the springs over time.

Fig. Interaction with senior citizens to grasp evolution in spring flow regime over time

CHAPTER SIX:

FREQUENTLY ASKED QUESTIONS

Q1. Whether a spring located in Forest area is to be included in the census?

Ans. Yes, all springs must be covered in the census.

Q2. Can a spring that only flows during the rainy season be considered seasonal?

Ans. No, a seasonal spring is a spring that discharges water for parts of the year, typically after receiving recharge from rainfall. However, springs that only flow during the rainy season are not true springs, but rather delayed surface runoff. Therefore, enumerators must ensure that the springs they survey have a notable duration of flow (>2-3 months) after the rainy season to be considered a genuine spring.

Q3. What does it mean by dried springs?

Ans. A dried spring refers to a spring that had a significant history of discharge (>10 years) in the past but has since ceased to flow due to various reasons. The history of such springs must be verified through local accounts and testimony from residents, and photographic evidence must be provided to substantiate the existence of the dried spring, showcasing clear indications of its past flow.

Q4. How will the discharge of a spring connected to a piped supply be measured?

Ans. The department or agency responsible for tapping the spring for water supply must be having the estimates of discharge data of the tapped spring. Consequently, the discharge value provided by the department or agency will be entered into the mobile app.

Q5. How "Spring discharge trend in last 10 years" will be known?

Ans. The identification can be made after consulting with a few elderly individuals who have utilized the spring water for long durations, gaining valuable insights from their experiences and knowledge.

Q6. What is to be done if the LGD code of a village/ward is not found?

Ans. If a village is not listed in the LGD directory and does not appear in the app, please notify this to your nodal officer for reporting to NIC. Meanwhile, to avoid delays and optimize efficiency, the name of the nearest village can be temporarily entered until the issue is resolved.

Q6. How to record the "Colour of water"?

Ans. Freshwater is typically colourless and appears transparent when filled in a glass. However, when impurities are present, the water may take on a different colour (become coloured) and appear cloudy or blurry when filled in a glass.

Q7. How to record the “Taste of water” if it has bad odour or impurities?

Ans. If the water has a bad odor or visible impurities, the enumerator should not taste it. Instead, they should select the answer 'Objectionable'. However, if the water appears clean and free of unpleasant odour, the enumerator may consult with local residents to determine its quality, rating it as either 'Objectionable' or 'Unobjectionable' accordingly.

ANNEXURES

Annexure-I

FIRST CENSUS OF SPRINGS
REFERENCE YEAR 2023-24
SPRING SCHEDULE

Rural-1/Urban-2 ☐

I IDENTIFICATION PARTICULARS (Standard Codes to be used)

(a) State..... Code ☐☐☐☐ (b) District..... Code ☐☐☐

For Rural
(a) Block/Tehsil..... Code ☐☐☐☐☐☐ (d) Villages name..... Code ☐☐☐☐☐☐

For Urban
(e) Town/Municipality..... Code ☐☐☐☐☐☐ (f) Ward No. ☐☐☐☐☐☐

Serial no. of spring within village/town ☐☐☐

Unique Identification Key for Spring, with prefix 'S' *(If urban give code for town and ward)*

R/U	State		District			Tehsil/Town/Block						Village/Ward						Sl. No. within village/town		

Timestamp of Survey *[dd-mmm-yyyyhh:min]* ☐☐☐☐☐

II SPRING DESCRIPTION

1.Locational Information
Latitude *(Degree Decimal)* ☐☐☐☐☐ Longitude *(Degree Decimal)* ☐☐☐☐☐ Altitude *(m, a.m.s.l.)* ☐☐☐

2. Local Nomenclature of Spring......

3. Spring type: Free Flow-1, Seep-2 Code ☐

4. Spring Nature: Perennial-1, Seasonal-2, Dried-3 Code ☐

5. Whether this is a newly emerged spring *[within the last 10 years]:* Yes-1, No-2 Code ☐

6. Does spring discharge muddy water in rainy season?: Yes-1, No-2 Code ☐

7. Cleanliness in and around the spring: Satisfactory-1, Unsatisfactory-2 Code ☐

8. Spring ownership: Public-1, Private-2 Code ☐

9. Whether there is any chamber/tank to collect the water? Yes-1, No-2 Code ☐

10. Whether there is any pipe water supply from spring? Yes-1, No-2 Code ☐

11. Capture three photographs for additional details
- **(a) Close up shot of spring** *(about 2 m from the spring outlet)*
- **(b) Wide angle shot of spring** *(about 10-20 m from the spring outlet)*
- **(c) Selfie with spring**

III GENERAL PHYSICAL CHARACTERISTICS OF THE SPRING

1.Whether spring discharge could be measured?Yes-1, No-2 Code ☐

2. No. of spring outlets *[If the answer of III (1) is 'Yes' i.e., Code-1]* ☐

Volume*(litres)* ☐☐☐☐ Duration*(min:sec)* ☐☐☐☐ Discharge*(litre per minute)* ☐☐☐☐

3. Seasonal variability of the discharge across the year: High-1, Low-2 Code ☐

4. Spring discharge trend in last 10 years:
Highly decreased-1, Slightly decreased-2, No change-3, Increased-4 Code ☐

5. Colour of spring water: Colourless-1, Coloured-2 Code ☐

6. Smell/odour of water: Agreeable-1, Non-agreeable-2 Code

7. Taste of water: Objectionable-1, Unobjectionable-2 Code

8. Temperature of spring water: Hot-1, Cold-2 Code

IV OTHER INFORMATION

1.Dominant land use land cover in spring upstream:
Agriculture-1, Forest-2, Pasture-3, Shrubs-4, Settlement-5 Code

2. Land use land cover in and around spring location:
Agriculture-1, Forest-2, Pasture-3, Shrubs-4, Settlement-5 Code

3. Resource threat: Yes-1, No-2 Code

If the answer of IV (3) is 'Yes' i.e., Code-1, fill the following details,

(a) Degree of threat: Low-1, Moderate-2, High-3 Code

(b) Major stressor responsible for threat *(up to three codes, in the order of preference):*
Drought-1, Forest Fire-2, Scouring/Gully Erosion-3, Landslide/Subsidence-4, Code
Earthquake-5, Avalanche-6, Urbanization-7, Deforestation-8, Pollutant load-9, Code
Introduction of non-native plants-10, Animal grazing-11, Mining-12, Other-13 Code

4. Usage of spring water *(up to three codes, in the order of preference):* Code
Drinking/Cooking-1, Washing/Sanitation, Cattles/Livestock-3, Code
Irrigation-4, Indutrial-5, Other-6 Code

5. Dependent type: Residents-1, Non-residents-2, Wild animals-3, Not applicable-4 Code

If the answer of IV (5) is 'Residents' i.e., Code-1, fill the following details,

(a) Number of dependent villages:
(b) Name of dependent villages: .....
(c) Number of dependent households:
(d) Number of dependent people:

6. Dependency level: Low-1, Moderate-2, High-3 Code

7. Other available source of water *(select multiple options, if applicable):*
Other spring-1, Piped supply-2, Hand pump-3, Dugwell-4, Pond-5, None-6, Other-7 Code

8. Whether the spring has undergone any springshed/watershed management program? Code
Yes-1, No-2, Not known-3

Remarks, if any:
Checked by:
Name:
Designation of Supervisory Officer:
Mobile No.:

Signature of Enumerator:
Name:
Designation of Enumerator:
Mobile No.:

Annexure-II

VALIDATION CHECK FOR SCHEDULE OF 1ST SPRING CENSUS

Item/ Field	Validation check	Special check (Howler check to be shown in separate form for re-check of higher value)
[1] IDENTIFICATION PARTICULARS		
Serial no. of spring within village/town	Should be unique and greater than zero for the particular village/town	This serial number will be used in the creation of the Unique Identification Key for spring. Submission of schedule will not be allowed without Serial Number.
[2] SPRING DESCRIPTION		
2.1. Locational Information		
2.2. Local Nomenclature of Spring	Value should be in text only.	Show error in case of special characters.
2.3. Spring type	Valid codes are 1 and 2	
2.4. Spring Nature	Valid codes are 1,2, and 3 If code in item 2.4 is 3, then the schedule will be completed here itself and no further information will be collected.	
2.5. Whether this is a newly emerged spring[within the last 10 years]	Valid codes are 1 and 2	
2.6. Does spring discharge muddy water in rainy season?	Valid codes are 1 and 2	
2.7. Cleanliness in and around the spring	Valid codes are 1 and 2	
2.8. Spring ownership	Valid codes are 1 and 2	
2.9.Whether there is any chamber/tank to collect the water?	Valid codes are 1 and 2	
2.10.Whether there is any pipe water supply from spring?	Valid codes are 1 and 2	
2.11. Capture three photographs for additional details		
[3] GENERAL PHYSICAL CHARACTERISTICS OF THE SPRING		
3.1. Whether spring discharge could be	Valid codes are 1 and 2	

measured?		
3.2. No. of spring outlets	(i) If code in item 3.1 is 1 then item 2 will be filled, otherwise item 3.2 will be skipped. (ii) Value to be given in the 'No. of Spring Outlet' should be >0	According to the value given in the 'No. of Spring Outlet' Volume (in litres) and Duration (min:sec) will be filled. e.g., if there are 2 No. of Spring Outlets, then Volume and Duration for two outlets will be filled.
3.3 Seasonal variability of the discharge across the year	Valid codes are 1 and 2	
3.4. Spring discharge trend in last 10 years	Valid codes are 1,2,3, and 4	
3.5 Colour of spring water	Valid codes are 1 and 2	
3.6 Smell/odour of water	Valid codes are 1 and 2	
3.7 Taste of water	Valid codes are 1 and 2	
3.8 Temperature of spring water	Valid codes are 1 and 2	
[4] OTHER INFORMATION		
4.1 Dominant land use land cover in spring upstream	Valid codes are 1,2,3,4 and 5	
4.2 Land use land cover in and around spring location	Valid codes are 1,2,3,4 and 5	
4.3 Resource threat	Valid codes are 1 and 2 [If code in Item 4.3 is 1 then item 4.3(a), and 4.3(b) will be filled]	
4.3(a) Degree of threat	Valid codes are 1, 2, and 3	
4.3(b) Major stressor responsible for threat	Valid codes are 1 to 13	Only three codes should be filled.
4.4 Usage of spring water	Valid codes are 1 to 6	Only three codes should be filled.
4.5 Dependent type	Valid codes are 1, 2, and 3 [If code in Item 4.5 is 1, then Item 4.5(a), 4.5(b), 4.5(c), and 4.5(d) will be filled.]	
4.5(a) Number of dependent villages	Value should be >0	
4.5(b) Name of dependent villages	Value should be in text only.	Show error in case of special characters.
4.5(c) Number of dependent households	Value should be >0	
4.5(d) Number of dependent people	Value should be >0	
4.6 Dependency level	Valid codes are 1,2, and 3	
4.7 Other available source of	Valid codes are 1 to 6	Multiple codes can be filled.

water		
4.8 Whether the spring has undergone any springshed/watershed management program?	Valid codes are 1,2, and 3	

Annexure-III

PROVISION OF FUND

As a token of appreciation of work entrusted to various officials in addition to their normal duties and not as compensation or remuneration for additional work, the officials who would be involved in field work, scrutiny, inspection of field work and schedules at the District/Block/village levels shall be paid suitable honorarium for 1st census of Springs which will be drawn from the grants released to the States/UTs by the Dept. of Water Resources, RD & GR. Ministry of Jal Shakti under 'Irrigation Census' scheme. The rates of grant towards honorarium have been decided as below for different administrative levels for primary and supervisory work. The honorarium for each District and Block is fixed and it is expected that only one officer from each District and Block would go to the field for physical verification of the filled-in schedules.

Rates of Honorarium:

In the 1st Census of Spring, rates of honorarium for coordination, supervision and conduct of the field work shall be as under:

Table 1: Rate of different expenditure involved in conducting the 1st Springs Census

S.No.	Item		Rate (in Rs.)
I	**Honorarium**		
i.	Field Allowance per Spring for enumerator (Maximum)	Category-I States/UTs	750/-
		Category-II States/UTs	500/-
		Category-III States/UTs	400/-
		Category-IV States/UTs	250/-
ii.	Block Level Officer		960/-
iii.	District level Officer		1320/-
iv	State/UT level Officer		3600/-
II	**Contingency per Spring**		75/-
III	Computerization cost per Spring (maximum including validation)		3/-
IV	**User charges of smart phone per Spring**		5/-

Contingency amount is to be spent on

i. Providing State/ district level trainings to enumerators and supervisors,
ii. Advertisement for Spring Census, publicity, mass awareness etc.,

iii. Transportation to be used by the State for supervisory work during the census.

iv. Providing training honorarium to the District level officers, who would provide training to the enumerators and Block level supervisors maximum up to @ Rs.1650/- per day including transport

v. Providing Rs. 165/- enumerator/ Block officer as TA, DA for attending the training and

vi. any other unforeseen miscellaneous expenditure of contingent nature which may arise during the conduct of the Census, subject to ceiling of total contingency expenditure sanctioned for the State/UT for 1st spring census.

Contingency amount Rs. 75/- per spring for Census of springs will be provisioned.

Field allowance:

Keeping the nature of work in view for conducting the spring census provision of field allowance for enumerators, block level, district, state level officers have been made in the first spring census. The field allowance is flexible and to be fixed by the States/UT after due deliberations keeping in view the no. of springs, the distances and terrain in their states. It is proposed to categories the states as tabulated below depending upon the nature of topography and difficulty in traversing the terrain while carrying out the spring census.

Table 2: Category of states/UTs based on topography

Category	Name of States/UTs
I.	**Extremely Tough Topography**
1.	Ladakh
2.	Lahaul and Spiti of Himachal Pradesh
3.	Arunachal Pradesh
II.	**Highly Tough Topography**
1.	Nagaland
2.	Manipur
3.	Mizoram
4.	Tripura
5.	Kashmir Division of Jammu & Kashmir
III.	**Moderately Tough Topography**
1.	Assam
2.	Himachal Pradesh Except Lahaul and Spiti
3.	Uttarakhand
4.	Jammu Division of Jammu & Kashmir

5.	Meghalaya
6.	Sikkim
IV.	**Gentle Topography**
1.	Andhra Pradesh
2.	Bihar
3.	Chhattisgarh
4.	Gujarat
5.	Haryana
6.	Jharkhand
7.	Karnataka
8.	Kerala
9.	Madhya Pradesh
10.	Maharashtra
11.	Odisha
12.	Punjab
13.	Rajasthan
14.	Tamil Nadu
15.	Telangana
16.	Uttar Pradesh
17.	West Bengal
18.	Andaman & Nicobar Islands
19.	Chandigarh
20.	Dadra & Nagar Haveli
21.	Delhi
22.	Daman &Diu
23.	Goa
24.	Lakshadweep
25.	Puducherry

The funds shall be released to States/UTs on reimbursement basis. After conduct of census,the States/UTs shall be required to submit the proposal for release for funds adhering to above norms at para 3. The honorarium shall be reimbursed as per the details mentioned at para 3.1 above. Since the terrain is not uniform throughout the State, after the conduct of census, States shall be asked to inform the names of district which are on the higher altitude as compared to the remaining parts of State and accordingly, the admissible honorarium shall be reimbursed to the State.

Annexure-IV

MOBILE SPECIFICATIONS

For data collection, the specifications of the mobile phones to be used are as follows:

1. Android version should be above 8
2. Minimum storage should be 10 GB
3. RAM should be minimum 2 GB
4. ROM should be minimum 10 GB
5. Battery should be 2500 - 4000 MaH
6. Location Sensor is mandatory