Annexure 1.1

List of attendees in one day brainstorming workshop on 'Development of Stranded Operating Procedure (SOP) for Springshed Management' at NIH, Roorkee on 15 May, 2023

S. No.	Name of the Officer/ invitee	Designation	Organization
1	Dr. Sudhir Kumar	Director	National Institute of Hydrology (NIH), Roorkee
2	Er. Sher Singh	Vice Chairman	Brahmputra Board, Guwahati, DoWR, RD&GR, Ministry of Jal Shakti, Govt. of India
3	Sh. D.S. Meena (IFS)	Additional Secretary (Forest)	Uttarakhand Forest Dept.
4	Er. S.K. Das	Chief Engineer	Department of Rural Development, Tripura
5	Dr. S.D. Khobragade	Scientist 'G'	National Institute of Hydrology (NIH), Roorkee
6	Dr. H.J. Shivaprasad	Professor	G B Pant University of Agriculture & Technology, Pantnagar, Uttarakhand
7	Dr. Sumit Sen	Associate Professor	Indian Institute of Technology, Roorkee
8	Dr. S.K. Barataryia	Scientist 'G' (Retd.)	Wadia Institute of Himalayan Geology (WIHG), Dehradun
9	Dr. Badrish Mehra	Excuitive Director	Central Himalayan Rural Action Group (CHIRAG), Uttarakhand
10	Dr. Debashish Sen	Director	People's Science Institute (PSI), Dehradun
11	Dr. M S Rao	Scientist 'F'	National Institute of Hydrology (NIH), Roorkee
12	Sh. R.K. Singh	Director (Watershed Management)	Dept. of Land Resources (DoLR), Ministry of Rural Development, Govt. of India
13	Dr. S.S. Rawat	Scientist 'F'	National Institute of Hydrology (NIH), Roorkee
14	Sh. Tapan Chakravarti	Scientist 'E'	Central Groundwater Board (CGWB), Faridabad
15	Dr. Prashant Rai	Regional Director	Central Groundwater Board (CGWB), Dehradun
16	Sh. Biplab Ray	Scientist 'E'	North Eastern Region , CGWB, Guwahati

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S. No.	Name of Officer/ invitee	Designation	Organization
17	Ajit Kumar Debbarma	Superintending Engineer	Planning & Design Unit, PWD (DWS), Agartala, Tripura
18	Er. S.K. Saha	Superintending Engineer	Irrigation Research Institute (IRI), Roorkee
19	Dr. D. Gnanasundar	Senior Joint Commissioner	National Hydrology Project
20	Dr. R.R. Purohit	Scientist 'D'	SUO, Agartala, CGWB
21	Dr. D.J. Khound	Scientist 'D'	North Eastern Region, CGWB, Guwahati
22	Dr. Som Dutt	Scientist 'D'	Wadia Institute of Himalayan Geology (WIHG), Dehradun
23	Dr. Santosh Murlidhar Pingale	Scientist 'D'	National Institute of Hydrology (NIH), Roorkee
35	Dr. Pramanada	Scientist 'D'	Forest Research Institute, Dehradun
24	Dr. Sandeep Bhatt	Assistant Professor	IIT, Roorkee
25	Dr. Vinod Kothari	Area Manger	Himmothan, Tata Trust, Uttarakhand
26	Sh. Nikhilesh Pant	Geologist	Himmothan, Tata Trust, Uttarakhand
28	Er. Vaibhav E. Gosavi	Scientist 'C'	G B Pant National Institute of Himalayan Environment, MoEF&CC, Govt. of India
29	Dr. D.S. Bisht	Scientist 'C'	NIH, Western Himalayan Regional Center (WHRC), Jammu
30	Dr. Nitesh Patidar	Scientist 'C'	National Institute of Hydrology (NIH), Roorkee
31	Dr. Abhilash R.	Scientist 'C'	NIH, Hard Rock Regional Center, Belagavi, Karanataka
32	Er. Manish Shankar Sant	Assistant Engineer	Irrigation Research Institute (IRI), Roorkee
33	Dr. Vikas Tomar	Scientist 'B'	Central Groundwater Board (CGWB), Dehradun

Annexure 1.2

List of Institutions Consulted

S. No.	Name of Agencies	Role in Springshed Management
1	GBPNIHE, Almora	Spring inventory and springshed mapping, hydrological modeling and promotion of springshed Management Programs under various schemes including NMHS
2	ACWADAM, Pune	Hydro-geological aspects, capacity building of state level stakeholders in Himalayan region, Western and Eastern ghats
3	CGWB	Capacity building programme in NE region and hydrogeology of the area
4	PSI, Dehradun	DTR preparation, spring water quality, capacity building of organizations, implementing springshed management programmes
5	CHIRAG, Almora	DTR preparation, implementation of springshed management, capacity building and field support
6	NIH, Roorkee	Spring inventory, Isotopic and geochemical investigations, hydrological modelling and impact assessment
7	PRASARI, West Bengal	DTR preparation, implementation of springshed Management, Capacity Building
8	NEIDA, Guwahati	DTR preparation, implementation of springshed management in North Eastern States
9	IIT, Roorkee	Hydrological modeling, instrumentation in springshed
10	GSI	Basic information in the form of geological/lithological maps of the area
11	NABARD and its partner organizations	Springshed based watershed development programmes
12	Watershed Management Directorate, Dehradun	Springshed management under watershed development and PMKSY programs
13	Land Resources Department, Kohima	Implementation of springshed management programs in Nagaland
14	Rural Development Departments of Himachal Pradesh, Sikkim and West Bengal	Implementation of springshed management programs
15	MBDA, Meghalaya	Implementation of springshed management programs under CLLMP and MEGLife Projects
16	Forest Departments of Himachal Pradesh, Manipur, and Uttarakhand	Implementation of springshed development of springs located in forest areas

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S. No.	Name of Agencies	Role in Springshed Management
17	Jal Shakti Vibhag of Arunachal Pradesh and Himachal Pradesh	Revival of drying springs feeding pipeline water supply schemes
18	NGOs including BAIF, HIMMOTHAN, CORD, MVS, and RTDC	Implementation of springshed development Programs
19	Arghyam, Bengaluru	Development of IEC materials on springshed management programs
20	ICIMOD, Nepal	Action Research on springshed management programs in the Hindu Kush Mountains

Annexure 3.1

FORMAT FOR LEVEL-I SURVEY

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 *(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-yyyy hh: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 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 ☐

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 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 3.2

FORMAT FOR LEVEL-II SURVEY

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 *(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-yyyy hh: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
- **(i)** **Close up shot of spring** *(about 2 m from the spring outlet)*
- **(ii)** **Wide angle shot of spring** *(about 10-20 m from the spring outlet)*
- **(iii)** **Selfie with spring**

12. Any permanent structure on spring? Yes-1, No-2 Code ☐

13. Hydrogeological Information
- **(i)** **Spring Typology:** Depression-1, Contact-2, Fracture/Fault-3, Karast-4, Thermal-5 Code ☐
- **(ii)** **Rock type:** Phyllite-1, Schist-2, Shale-3, Sandstone-4, Limestone-5, Granite-6, Gneiss-7, Basalt-8, Quartzite-9, any ot her type-10 (mention the same) Code ☐
- **(iii)** **Aquifer type:** Confined-1, Unconfined-2, Karst-3 Code ☐

14. Topographical feature: Hill top-1, Middle of the hill-2, valley/bottom of the hill-3 Code ☐

15. Settlement near the spring: Yes-1, No-2 Code ☐

17. Accessibility to spring: Easy-1, Moderate-2, Difficult-3 Code ☐

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 Code-1]* — Code ☐

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

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

4. Peak months of discharge *(select multiple months up to three, if applicable):*

January-1, Feburary-2, March-3, April-4, — Code ☐
May-5, June-6, July-7, August-8, — Code ☐
September-9, October-10, November-11, December-12 — Code ☐

5. Lean months of discharge *(select multiple months up to three, if applicable):*

January-1, Feburary-2, March-3, April-4, — Code ☐
May-5, June-6, July-7, August-8, — Code ☐
September-9, October-10, November-11, December-12 — Code ☐

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

7. Colour of spring water: Clean-1, Yellowish-2, Reddish-3, Brownish-3, Greyish-4, Greenish-5, Other-6 — Code ☐

8. Smell/odour of water: Agreeable-1, Non-agreeable-2 — Code ☐

9. Taste of water: Objectionable -1, Unobjectionable-2 — Code ☐

10. Electrical conductivity of water (µS/cm)

11. pH of water *(in decimal)*

12. Temperature of spring water *(°C)*

13. Dissolved Oxygen (*mg/l*)

IV SPRING WATER SAMPLE COLLECTION FOR LAB ANALYSIS

1. 100 ml sample for major ions: Yes-1, No-2 — Code ☐

2. 60 ml sample for Carbonates and Bi-carbonates: Yes-1, No-2 — Code ☐

3. 60 ml sample for trace elements: Yes-1, No-2 — Code ☐

4. 15 ml sample for stable isotope of Hydrogen and Oxygen: Yes-1, No-2 — Code ☐

5. 500 ml sample for Tritium: Yes-1, No-2 — Code ☐

V 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 ☐

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: Natural-1, Anthropogenic-2, Both-3 — Code ☐

(c) Based on the option selected in IV (3) (b) select the appropriate options:

(c1) Natural stressor *(up to three codes in order of preference):* Code ☐
Drought-1, Forest Fire-2, Scouring/Gully Erosion-3 Code ☐
Landslide/Subsidence-4, Earthquake-5, Avalanche-6, Other-7 Code ☐

(c2) Anthropogenic stressor *(up to three codes in order of preference):* Code ☐
Urbanization-1, Deforestation-2, Pollutant load -3 Code ☐
Introduction of non-native plants-4, Animal grazing-5, Mining-6, Other-7 Code ☐

(c3) Both Natural and Anthropogenic stressor *(up to three codes in 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 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 Code ☐

If the answer of IV (5) is 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 population: ☐☐☐☐☐
(e) Number of dependent livestock: ☐☐☐☐☐

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 management program? Yes-1, No-2, Not known-3 Code ☐

i.e., Code-1, provide detail of the impact of springshed management program as follows,

(a) Change in spring discharge: Increased-1, Decreased-2, No change-3 Code ☐
(b) Longevity of spring discharge: Increased-1, Decreased-2, No change-3 Code ☐
(c) Spring water quality: Improved-1, Degraded-2, No change-3 Code ☐

9. Whether the recharge area of spring has been demarcated? Yes-1, No-2 Code ☐

10. Whether the discharge of spring is being measured regularly? Yes-1, No-2 Code ☐

11. Whether local residents feel the need of springshed management program? Yes-1, No-2 Code ☐

12. Community Perception:
(i) Concerns
(ii) Any feedback they provide

13. Erosion Control Measures near the spring: Yes-1, No-2 Code ☐

14. Community Initiatives taken to spring conservation or management: Yes-1, No-2 Code ☐

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

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

Annexure 11.1

Capacity Building Needs of Functionaries involved in springshed management

Step	Particulars	Capacity Building Gaps/Needs			
		Community and GP Level	**Para Workers**	**Extension Agencies: GO/NGOs**	**Policy/Decision Makers**
1	Comprehensive Mapping of Springs and Springsheds	Convergence with GPDPs, Importance of water quality	Recording Oral history; Water Resources Assessment; Water Budgeting	Mapping Tools; Standard Template for Spring Inventory; Water Quality	Springsheds as ecosystems; Concept of Spring Sanctuaries
2	Setting up a Data Monitoring System	Community based monitoring tools	Data Collection and Interpretation	Spring Hydrology Modeling; Long term monitoring	Convergence with Res. Inst.
3	Understanding Social and Governance Systems of Springs	Convergence with VWSC/ WATSAN/ MMD	Community Mobilization	Role of Community Based Institutions	Participatory Spring Governance
4	Hydrogeological Mapping, development of conceptual layout and identification of recharge area	Demystifying hydrogeology	Hydro-geological aspects of springshed and aquifer	Hydro-geological aspects of springshed and aquifer	Looking beyond administrative boundaries
5	Developing springshed management and governance protocols	Water sharing, sanitation practices, biomass sharing, etc.	Conflict Resolution	Integrating with NR mgt., septic mgt. and demand mgt.	CPR Mgt., Convergence of govt. depts. and schemes
6	Measuring the impacts of spring revival activities	Participatory Assessment	Base line surveys	Means of Verification; Cost benefit analysis	Result Framework

Annexure 11.2(A)

Training Modules for Community and GP Level

Training Module – I

THEORY:

- Significance of groundwater
- Introduction to the concept of springs
- Importance of community participation
- Formation of Water User Groups and convergence with VWSC/WATSAN/ MMD
- Protocols for Water User Groups including social fencing, sharing of water, contributions
- Water sharing, sanitation practices, and biomass sharing
- Conducting PRA activities
- Importance of water quality and discharge measurement

FIELDWORK:

- Community-based water quality and discharge measurement
- Exposure visits

Training Module – II

THEORY:

- Revision of the first training
- Relevance of trenches and other structures in the recharge area
- Community based monitoring and decision making
- Convergence with different agencies and government departments
- Participatory impact assessment

FIELDWORK:

- Construction of trenches and its protocols
- Recharge area protection activities
- Maintenance of the recharge area

Annexure 11.2(B)

Training Modules for Para Hydrogeologists

Training Module – I

THEORY:

- Significance of groundwater
- Introduction of Springshed
- Springs typology and hydro-geological aspects
- Community mobilization
- Introduction of PRA exercises and record oral history
- Water resource assessment and water budgeting
- Importance of water quality measurement
- Spring discharge and rainfall data interpretation
- Relation between discharge and rainfall measurement
- Basic as well as detailed water quality parameters
- Format of baseline survey
- Data analysis and interpretation

FIELDWORK:

- Transit walk, identification of springs and rocks, geological mapping
- PRA exercises with the community
- Analysis of the PRA results
- Installation of rain gauge
- Discharge and Rainfall measurement
- In-situ parameters of water quality testing
- Water demand and supply gap estimate
- Data analysis and interpretation

Training Module – II

THEORY:

- Revision of the first training
- Various engineering and vegetative measures for different land uses and slopes
- Design and estimates of measures
- Maintenance of records and documentation related to the payment for the recharge activities
- Carrying out convergence activities and writing proposals for the same

- Formation of Water User Groups
- Protocols for Water User Groups including social fencing, sharing of water, contributions
- Conflict Resolution
- Conducting awareness programs for communities
- Protection of recharge area

FIELDWORK:

- Identification of recharge area
- Contour mapping, use of A-Frame, and slope measurement
- Layout of trenches
- Sensitization of the community regarding recharge activities and convincing landowners to carry out recharge activities on their land
- Supervision and monitoring of recharge activities

Annexure 11.2(C)

Training Modules for Extension Agencies

Training Module – I

THEORY:

- Groundwater and its significance
- Introduction to springs
- Introduction to geology and hydrogeological properties of the rocks
- Introduction to Springshed Management
- Spring discharge measurement
- Groundwater quality: An introduction
- In-situ water quality testing
- Springshed planning: Water demand, supply and gap estimates
- Introduction to the use of instruments like GPS, Brunton
- Community mobilization (Sandesh Yatra)
- Participatory mapping tools like social and resource mapping
- Spring Inventory

FIELDWORK:

- Transect walk, Social and Resource Mapping
- Water budgeting
- Identification of springs and rocks
- Geological mapping
- Discharge measurements and water quality testing

Training Module – II

THEORY:

- Revision of the first training
- Identification of recharge area
- Springs regeneration methods
- Engineering survey: contour mapping: use of A-Frame, slope measurement
- Engineering and Vegetative measures
- Integration with natural resource management, demand management, and septic management

FIELDWORK:

- Slope measurement
- Contour mapping
- Layout of SCTs

Training Module – III

THEORY:

- Revision of the second training
- Community Based Institutions
- Formation of Spring Water User Group
- Protocols for WUGs including social fencing, sharing of water, and contributions.
- Monitoring Systems: Rainfall, Discharge & Quality
- Data Analysis and Interpretation
- Cost Benefit Analysis

FIELDWORK:

- Formation of WUG
- Installation of rain gauges
- Data Collation, Analysis, and Interpretation

Annexure 11.2(D)

Training Modules for Policy/Decision Makers

Training Module

THEORY:

- Groundwater and its significance
- Introduction to springs and springsheds ecosystem
- Concept of Spring Sanctuaries
- 6 Step Methodology of Springshed Management
- Introduction to hydrogeology of springs
- Introduction to the concept of springshed management vs watershed management
- Participatory mapping of springs
- Spring Treatment Measures
- Spring governance including protocols for WUGs
- Result Framework: Baseline Survey and Impact Assessment
- Research areas
- Convergence

FIELDWORK:

- Field visit of successful springshed management sites
- Interactions with WUGs
- Monitoring system (Rainfall, Discharge and Water Quality)