

**TRAINING AND FACILITATION IN HYDROGEOLOGY TO ENHANCE CIVIL SOCIETIES CAPABILITIES IN WATERSHED AND GROUNDWATER MANAGEMENT**

*Supported by ARGHYAM*

Advanced Center for Water Resources Development and Management (ACWADAM) is a not-for-profit organization working in earth sciences applications, particularly in groundwater resources management. It consists of a team of professionals from the field of earth sciences. ACWADAM's main thrust has been on the process of capacity building and facilitation, both founded strongly on its research base. ACWADAM has embarked on strengthening *Civil Society capabilities* in groundwater management, using the watershed management platform. As a part of this endeavor, ACWADAM has begun running a *fifteen-day* training programme on basic hydrogeology or groundwater science, for professionals from Civil Society Organisations or NGOs. The training is not intended to be a 'stand alone exercise' in capacity building, but will be followed by ACWADAM providing facilitation to promising trainee organizations in their respective field areas.

**The training (to be conducted in Pune) will cover the following topics:**

1. Introduction to basics of geology
  - a. The earth system
  - b. Introduction to maps
2. Physical geology and geomorphology
  - a. Types of rocks
  - b. Processes that shape the earth
  - c. Drainage and landforms
3. Hydrogeology
  - a. What is groundwater?
  - b. What are aquifers?
  - c. Types of aquifers
4. Measurement of weather parameters in groundwater resources investigations
  - a. Why study weather?
  - b. Measurement of weather parameters
  - c. Weather station
  - d. Data collection
5. Hydrogeology-quantifying groundwater
  - a. Aquifer properties
  - b. Pumping tests
  - c. Recharge-discharge and groundwater balances
  - d. Movement of water in a watershed
  - e. Movement of groundwater
  - f. Groundwater exploration

6. Springs
  - a. What are springs?
  - b. Classification of springs.
  - c. Spring water Management
  - d. Data Analysis
7. Groundwater quality and groundwater resources management
  - a. Groundwater chemistry
  - b. Sampling procedures and analysis
  - c. Interpreting groundwater quality
8. Geological mapping
  - a. Mapping the framework in which groundwater accumulates and moves in a watershed
  - b. Remote sensing applications
  - c. Hydrogeological maps
9. Hydrogeology as a tool for impact assessment
  - a. Monitoring
  - b. Measuring natural and artificial recharge
  - c. Use of remote sensing in impact assessment
10. Managing groundwater resources
  - a. Groundwater problems in India
  - b. What is groundwater management
  - c. Groundwater legislation
11. Data bases and Case studies
  - a. Storing groundwater related information
  - b. GIS applications for groundwater
  - c. Case studies
12. Groundwater in agriculture
  - a. Introduction to groundwater resources in agriculture
  - b. Cropping and irrigation
13. Hydrogeology and Sanitation

**The training will include interactive class-room sessions and *hands-on* practical training on the above topics. Trainees will also conduct about three days of FIELDWORK including:**

- 1. Geological and hydrogeological mapping**
  - Preparation of geological maps
  - Field observations and measurement, especially on water levels.
  - Running a weather station and using meteorological information in groundwater management programmes.
  - Collection of hydrogeological information.
- 2. Pumping tests, in-situ testing of groundwater quality and its sampling**
  - Conducting pumping tests to understand aquifers better.
  - In-situ measurement of basic water quality parameters
  - Collection of samples for water quality analysis

3. **Field visit to an area to collect information on groundwater use especially for irrigation; discussion with farmers**

*Training material will be provided to each participant.*

#### **OTHER DETAILS**

- **Duration:** 15 days
- **Dates for training:** 2<sup>nd</sup> to 17<sup>th</sup> January 2017. (*Training will commence at 9.00 am on 2<sup>nd</sup> January 2017*). *Outstation participants can reach the venue in the evening of 1<sup>st</sup> January or early morning on the 2<sup>nd</sup> January 2017.*
- **Venue:** Venue details will be informed to you later.
- **Subsidized Training cost:** The training is being supported by ARGHYAM. A nominal cost of Rs. 4,600/- will be charged to every participant for the entire 15 days. The cost includes lodging, boarding and training material costs. Participants or organizations who wish to confirm their admission to this course are requested to contact ACWADAM by email on [acwadam@vsnl.net](mailto:acwadam@vsnl.net) to obtain details of making the payment.
- **Travel costs will NOT be borne by the organizers. Participants or their respective organizations will have to take care of travel to and from Pune, and make their own travel arrangements.**