



Rainfall Monitoring

A. Before You Start

Importance

Rainfall is one of the most important watershed variables. Rainfall can significantly affect the amount of runoff into streams. Rainfall rate and quantity interact with many other factors to influence erosion, vegetative cover, groundwater recharge, stream water chemistry and runoff of nonpoint source pollution into streams.

Method

A standard rain gauge is mounted in a proper location and rainfall data are collected on a daily basis. Data are then entered into a computerized spreadsheet for analysis and inclusion in other forms of watershed calculations.

Equipment and Supplies

- Rain Gauge with 0.1 inch or 2 mm increments (or finer)
- Post
- Clipboard
- Data Sheets
- Pencil

Constraints

Placement and reading of rain gauge are critical to accurate measurement of rainfall. Data log must be kept up-to-date. A reading must be taken every day when there has been any amount of rainfall in the previous 24 hours.

Quality Assurance

If data are available for a site within a short distance, comparison data sets can yield quality assurance information.

Data Value

Rainfall is critical for determining runoff coefficients for watersheds and for other critical watershed measurements. Rainfall within a watershed can vary dramatically depending on the topography and microclimates of an area. Official gauging stations are widely scattered,

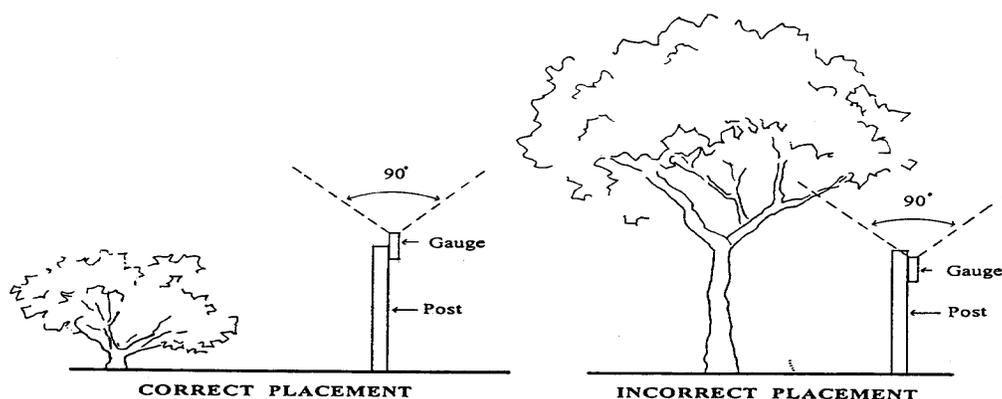
leaving little opportunity for collecting information specific to a particular watershed or creek. Citizens committed to consistently tracking rainfall in their own back yard can significantly contribute to the knowledge and understanding of the relationships between local rainfall and stream flow, hydrology, and geomorphology.

B. Monitoring Instructions

Rain gauge monitoring requires little equipment and a small amount of time: the greatest need is dedication to the activity over the course of a year.

Setting up the Rain Gauge

Place the rain gauge in an appropriate location where the gauge can be easily checked. The gauge must be positioned in an area which is clear of obstruction within an imaginary 90 degree cone, as illustrated below. Secure the gauge to a post or other object that will not bend in high winds. Make sure the gauge is "true" (not tilted in any direction) and has at least 4 feet of clearance from the ground to avoid any splash water.



The gauge should remain in the same position for the entire year. A rain gauge data sheet for recording daily rainfall totals can be found on the last page of this protocol.

Procedure

The Rain Gauger must choose a specific time of day which will be feasible for monitoring the gauge. The gauge must be monitored every day when there has been any amount of rainfall in the previous 24 hours. Mornings are best, as captured precipitation will quickly evaporate when the weather clears. It is wise to recruit a "backup" gauger who can fill in for the Rain Gauger when the need arises: it is critical that no precipitation data be missed. The monitoring procedure is as follows:

1. At the specified time of day, read the amount of captured precipitation. The water in the gauge is likely to appear rounded at the surface when observed at eye level. This is caused by water tension and is called a *meniscus*. The gauge is read at the center point of the meniscus.



2. Record the reading, including units (inches), before removing the gauge from its base. After recording the value, double check your reading, then empty the gauge and reset it.
3. Additional readings may be taken during the day, but **DO NOT EMPTY** the gauge after these midday readings: record the time and the reading in the journal as illustrated below. Note that entries #2 and 3 are midday readings. No "24 hour" notation was made, and the values in the "Reading(s)" column are cumulative, not added, since the gauge was not emptied during this period.
4. Use the Comments column to record such observations as trace precipitation which did not register on the gauge, driving rain conditions which might affect the operation of the gauge, or other phenomena of interest.

Date	Time(s)	Reading(s)	24 Hour Total Rainfall (inches)	Comments
1-1-94	8:30 am	0.35 in	0.35 in	Light, steady rain all night
1-1-94	12:30 pm	0.25 in		Still raining steadily -- no wind
1-1-94	5:00 pm	0.50 in		Rain tapering off
1-2-94	8:30 am	0.56 in	0.56 in	Clear at dawn

