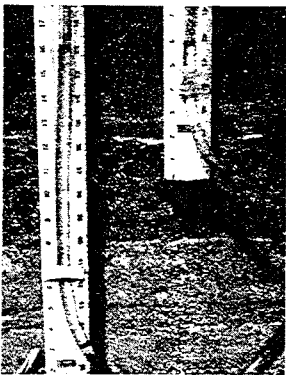


The Bunyip De-mystified

By *Tim Murphy*

There are many ways to survey a site and determine contour lines* at a given elevation, but in my opinion the best (easiest, most inexpensive, quick, adaptable, informative, and accurate) is to do it yourself with a "bunyip," or water level. For the cost of two long rulers, a length of flexible clear plastic tubing and a measure of time you'll have the satisfaction of intimately acquainting yourself with the general slope and micro-topography of your site. A lot once perceived as flat comes alive with sinuous curves that define patterns of water harvesting, delivery and storage potential.

Building a bunyip is a straightforward operation. The materials needed are: a) two identical rulers (4' or longer), b) fasteners to attach tubing to the top and bottom of each ruler (tape is adequate but not very glamorous), and c) enough 3/8" clear plastic tubing to span the length of each ruler and a proportional or modular distance between (explanation later). Each end



Notice the level tops of the water columns. The elevation difference is easily figured.

of the tubing is attached to the far ends, the ones marked with the highest increment, on the rulers. These will be the tops of the level. Next, run the tubing down each ruler and attach again at the bottoms, or near ends. After that, the tubing is filled with water, taking care to remove all air, until the half-way point on the rulers is reached. A hose with a conical pressure nozzle inserted into one end of the tubing works best to accomplish this.

The bunyip uses the pull of the earth to measure the difference in elevation between two points where the rulers are held upright. The tops of the water columns remain level relative to one another because they are parts of the same column. They serve as indicators on the rulers, which are the gauges. For example: if one ruler gauge reads 17 and the other 7 units of measure, there is a difference of 10 units (between the two points) in elevation. (Lifting the measuring sticks during placement can cause dramatic oscillation of the water columns. This can be controlled by holding the thumb over one end of the tubing until the measuring stick is in position.)

Added versatility for the bunyip is acquired by using a modular length of tubing between the ruler gauges

that corresponds proportionately to the unit of measure on the gauge. When the device is fully extended this allows the user to keep track of the span of the project, as well as measuring slope (expressed as a ratio of fall to span or fall:span). For instance, if the length of tubing between the rulers is 25' and after stretching full span four times (100' or 1200") the total drop between the original point and the last was 1" the slope would be 1:1200. Water traveling at that rate of fall would move slower than an easy walking pace, assuring no erosion.

Two minor drawbacks are: the user needs to place a thumb over one end of the tubing when changing position to avoid water loss, and that the change in elevation between the two points compared at one time can not exceed the height of one ruler.

This device works around corners, or over obstacles where line-of-site levels are ineffective. It can be used in carpentry, or to place a swale on a wooded contour without removing vegetation.

Because of its nearly instantaneous response to change in position, the device actually functions as a biofeedback instrument for developing depth perception. Eventually, finding a contour line can become as quick as pacing it off. Speed, low cost, and versatility are three endearing qualities of the bunyip but it is user-friendliness that makes it a favorite in my tool collection.

* Contour lines connect points of the same elevation on a landscape. A series of contour lines can describe on paper features as magnificent as mountains and valleys or as subtle as those of your back yard. Describing slope patterns in this manner is called topography.



Tim Murphy reads the water level in the foreground while John Patterson reads in the far background.



An earth water-harvesting swale, completed with the help of a bunyip.