

## Construct a Dirt Catchment for Harvesting Surface Runoff

By Daniel S. Howell

Many of our crops cannot tolerate the wet/dry cycles of runoff farming. So we harvest surface runoff water in dirt catchments then pump or siphon it to a storage tank for later use.

Our property is situated at the top of a small watershed around the base of a sandstone butte. Many rivulets concentrate to form first magnitude tributaries which are subject to flash floods in the severe summer storms. But the hill also provides many manageably sized drainages.

Our most successful dirt catchment is located just below the point where the gradient levels somewhat from a 40% to 10% slope. Working with hand tools meant the job had to be planned to allow ample time for completion prior to flooding. We chose a spot at the joining of two small drainages that formed an arroyo five feet deep. Using a wheelbarrow to move dirt, I dug - working back toward the hill, not down - building up the downhill dike, and creating a large base. Each load had to be tamped to make it strong enough to hold back the pressure of thousands of gallons of water. To accomplish this, I spread the dirt 4" thick and stomped on it with my booted feet and pushed the loaded wheelbarrow over it. As the work progressed a ramp allowed access to and from the tank area and the dam site.

We made a "drop structure" to absorb the force of the incoming water. Ours is built with flat rocks laid Samoan fashion to withstand flowing water, basically a shingle pattern starting at the bottom and working up.

It will be necessary no matter how large or small your project to have a spillway to allow excess water to escape without damaging the dike. Our spillway is made off to one side and is several feet wide and deep

enough to contain all the water ever expected. Minimum recommended size: 3' deep (below crest) and 10' wide. Our tanks nearly failed this past summer because hail plugged up the spillways and water breached the dike. Here is where the tamping and packing really paid off, as the dikes held even with 20% of the downslope washed away. The spillway should slope at least 6" per 100' to lead water away quickly to discharge into the original streambed.

Catchment storage should be sized to fill with just one flood event per season. This water may then be pumped into a metal or ferrocement storage, and will be available for refill with the next flood. (The dirt tanks themselves are not prime water storages because the evaporation and seepage leaves us without water by late spring when our needs are the greatest. They also collect large quantities of silt which must be removed annually.)

We store 10,000 gallons for watering the following growing season.

### SUGGESTIONS:

- \* Do not try to dam a flowing stream.
- \* Study the laws involved in your area.
- \* Keep it small and manageable (example: each of ours hold 1 acre" [1" water falling on one acre], and each catch water from 1 to 3 acres).
- \* Seek additional reading.
- \* Ask the Soil Conservation Service for professional assistance and advise.

(To estimate the capacity of a catchment, measure a rectangular area that approximates the surface area of the catchment. Multiply length times width to figure the square footage. Measure the point of greatest depth. Multiply times .4 to figure the average depth. Multiply that with your square footage to calculate cubic feet of water. Divide by 7.5 to determine gallons. [One cubic foot equals 7.5 gallons]. Take 80% of that figure to find the ponds' realistic storage capacity.)

