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Developing a Water System For Livestock on Pasture-How We Did It Here and How You Can Do It, Too

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It has been shown that the implementation of a rotational stocking system for beef cattle may improve pasture utilization, increase forage production, and consequently help to maximize beef production per acre when compared to continuous stocking. In developing a rotational stocking system, water quickly emerges as one of the key components of the system. In our situation, we wished to implement a rotational stocking system, but a water distribution problem limited our ability to do so. Five hundred of the eight hundred acres of pasture on this northwest Indiana farm depended on streams, springs and an unreliable well for providing livestock water. The natural water sources, while reliable, were not accessible from all the pastures. The well provided a poor flow of 1-2 gallons per minute, and went dry during the late summer months. Previous attempts to dig a new well proved to be unsuccessful. When cattle were in the affected pastures, we were hauling water 2 1/2 miles on a truck to the cattle. The water problem placed us in the unfortunate situation of moving cattle based on the availability of water rather than the availability of forage. As a result, we felt that we were not capturing the full benefit of our forage resources, and were expending labor that may be put to better use.

In the southwest corner of the farm, a spring provided water for the 40 acre pasture in which it was located (see figure 1).Cattle watered out of a pond fed by this spring. The spring had proven to be reliable, providing a consistent flow of 20-25 gallons per minute throughout the year. While it was a reliable water source, it was located almost two miles from the east pastures. Given the output and reliability of the spring, we made plans to collect the spring water into a reservoir, and pump it through buried pipe to the east pastures. Although the system was to be non-potable and designed for livestock consumption only, our first step after determining that it had sufficient capacity was to test the spring for any contaminants that may have made it unfit for cattle consumption. The water tests came back negative for any harmful contaminant levels.

The spring emerges at the ground surface through a layer of bedrock and shalestone. Using a backhoe, we dug a trench below the site where the spring

emerges. All the renovation work at the spring was conducted below the spring's point of emergence to prevent any backpressure on the spring itself (see figure 2).This was done to reduce the chances of changing the course of the spring and forcing it to emerge at some other location. The trench reached the limiting bedrock layer below the spring, and was lined with a sheet of geotextile fabric. On top of the fabric, we placed a section of 12-inch field tile to collect the spring water and carry it to a 4-inch diameter PVC pipe. The tile was buried and backfilled with rock. The 4-inch PVC pipe carries the water to a buried 2000-gallon concrete reservoir. Inside the reservoir, a 230V 3/4 hp submersible pump forces the water up a 55 foot incline to a 60 gallon pressure tank. The pressure tank is housed inside a 12' x 16' heated building. Heat is provided to the building via an 8 foot 230V electric baseboard heater. From the tank, water is piped to the east pastures through 6700 feet of 2-inch diameter SDR 21 PVC pipe. The pipe was buried at a minimum depth of 4 feet to prevent the possibility of freezing during the winter. This should allow us to extend grazing into the late fall without worrying about frozen water lines. Frost-free hydrants were plumbed in at each pasture location to bring the water back to the surface, where portable stock tanks are filled for the cattle. The hydrants will allow additional flexibility during summer grazing, allowing us to run above ground pipe to any one of a number of paddocks. Hydrants are located in existing fence lines to prevent interference with farming/haying operations in the fields. The system was finished in the fall of 1999, so we are looking forward to our first full grazing season beginning in the spring of 2000.We used the system in the fall of 1999 in some of our stockpiled pastures with successful results. Water at the hydrants is flowing at ~10-12 gallons per minute with 45 p.s.i. in the line.