Water Development on the Starkey Experimental Forest and Range

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One of the most effective tools of a land manager is water development. In the western United States, water often remains a critical and limiting factor in securing the maximum efficiency of land use.

At the Starkey Experimental Forest and Range, in northeastern Oregon, water development has been one of the key factors in obtaining proper distribution of cattle over the range. During the 1949-1953 period, water development increased in number from 9 to 52.

Development Procedure

Areas requiring water development to secure better livestock distribution are observed and studied over a period of one to five years before development is begun. During this period, the size and nature of water development for each location is determined. Plans and specifications for each development are made, but no installation is initiated until a sufficient number of developments within a given area are ready for construction. As a result, greater efficiency in use of heavy machinery is achieved and development costs are held to the minimum.

Type and Location of Water Developments

Stock water on the Starkey Experimental Forest and Range is provided by developed springs, and piping water to troughs, crib developments and ponds. In addition, two live streams provide water season-long and several intermittent streams furnish stock water during the early part of the grazing season.

Degree of development of water depends upon many variable factors, amount and season of water flow, accessibility of the area, and labor and equipment available. Size of the development is determined by the grazing capacity of the surrounding range area, the number of cattle to be watered, and the type and depth of soil at the proposed site.

Log troughs are used for springs which have a dependable, season-long flow (Fig. 1). These springs are observed for two or three years to determine the reliability of the water supply. The flow of weak or doubtful springs is measured during the season of lowest probable flow, usually in August or September. Small springs with a dependable flow of as little as four gallons per hour can be developed and piped to troughs. The average cost of these developments, including trough footings and head box, is approximately $150.

Crib developments are used for springs where water is available during a part of the season, but may dry up during the summer (Fig. 2). They consist of a storage area usually excavated by hand labor, a log dam and a pole fence. Cribs provide low-cost, permanent installations, which require a minimum of maintenance. Average development cost for labor and materials is approximately $75.

Small ponds which provide temporary water are constructed with bulldozers on seepage areas or where water-loving vegetation occurs (Fig. 3). Plant indicators play an important role in determining the location of ponds. The major species which indicates prospective watering sites is Rocky Mountain iris (Iris missouriensis). Generally where iris occurs in patches as large as 200 to 300 square feet, water is sufficiently close to the surface to provide a dependable flow of as little as four gallons per hour. Small springs with a dependable flow of as little as four gallons per hour can be developed and piped to troughs. The average cost of these developments, including trough footings and head box, is approximately $150.

Figure 1. Log trough placed on concrete footings with water piped from spring box provides dependable water for cattle. (Forest Service photo.)
water hole for cattle. Such patches are commonly found on grassland and timber fringe areas at elevations of 4,000 to 5,000 feet.

Of minor importance in locating or verifying the presence of water near the surface is falsehellebore (*Veratrum californicum*). This plant, although not as reliable as iris, serves to justify further investigation when found in abundance. Since this species commonly increases in density in areas heavily and continually grazed, it alone cannot serve as a good indicator of available water (Reid, 1942).

Some of the small ponds provide only enough water for one or two months. This, however, is desirable in areas where only a limited amount of feed is available. The temporary water allows utilization of available forage for a desirable period.

**Justification**

Only when increases in returns or improved management can be expected should extensive water developments be planned. On the Starkey the increase in grazing on areas previously ungrazed or understocked justifies water development at the higher altitudes. The resulting release of pressure on areas where cattle concentrations were habitual has resulted in a more uniform distribution of cattle and hence a more even utilization of available forage (Harris, 1954).

With increased development of watering areas, grazing pressure is decreased around the old water holes. The vegetation in these areas has a chance to grow back and provide a protective cover surrounding the water hole.

In addition, trailing, one of the common results of limited water supply, is materially reduced with the increase of available water. Cattle that once had to trail as much as two miles on the Starkey now have little interruption in their normal grazing habits to seek adequate water. At the present time no area on the range is further than three-fourth of a mile from available water. This fact alone suggests ability for the livestock to devote more time to grazing, rather than to spend needless time and energy in traveling long distances to water.

**Summary**

During a period of five years, the number of water developments on the Starkey Experimental Forest and Range Station increased from 9 to 52. The type of development was influenced by such fac-
tors as amount of herbage produced in the surrounding area, number of cattle using the water hole, soil type and depth of bedrock.

The increase in available water resulted in decreased concentrations of cattle in overgrazed areas and increased use of areas which previously received little or no utilization. In addition, a decrease in trailing resulted in an increase in time devoted to grazing by the livestock.

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LITERATURE CITED


Range Improvement — A Home Remedy

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The civilization of today, as has been the case for centuries, is built around the home and its operations. Each home has its joy, happiness, problems and discomforts. One family can not set up a criterion of living for another. Problems that arise are to be solved within the realm of those concerned. An unwholesome conduct on the part of one may pollute the lives of hundreds. In this case the problem has far surpassed the boundaries and limits of the home and then becomes a universal problem. Societies, clubs and other worthy organizations may make an attempt to counteract the problem and restore it to its once wholesome condition, but without the cooperation and working assistance of each individual home it is a futile effort.

A similar problem confronts the American rancher today. When our forefathers settled on the Western range land, they had little if any idea of what constituted a correct carrying capacity for their range. Because of the severe overstocking rates their grass soon became depleted, erosion began to develop and range invaders were soon a common sight.

The problem grew from one ranch to another and soon it was a universal problem. Everyone is aware of the misfortune, but are most of us mentally and physically ready to tackle the problem of restoration? It is a common occurrence to hear a rancher say "yes, it will work for him, because he has more rainfall." A rancher who blames his inability to produce grass upon the weather is trying to evade the issue and assume no responsibility in the range improvement program.

We have men who are available and willing to give any personal assistance that may be needed in planning an improvement program, but until each individual rancher assumes his responsibility to himself and to others, there can be no great progress made. We need to take this problem home and give it our own personal attention. Those who have had a systematic grazing program have come through the drought with money in the bank, cattle on the range, and grass to spare. The reason some ranchers have the assets and some do not is probably because some have not made an honest effort for such improvements. The initial investment will be small and the returns will be greater. Why don't you investigate the possibilities of a systematic grazing program?

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