

Off-Stream Stock Watering Systems Demonstration and Field Day
2023 Progress Report to The David Little Livestock Range Endowment

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Project Objectives:

Establish two off-creek livestock watering developments to distribute cattle and forage utilization more evenly across pasture uplands. Additionally, the off-creek water development would alleviate riparian use pressure by cattle.

2023 Project Goals:

System Installations - 1) Install Ram Pump including spring supply, piping, structure for ram pump, storage tank and water troughs. 2) Install River Pump including stabilization support, piping, and trough 3) Initial data collection.

Current Progress:

West Fork of Rock Creek/Kent Canyon Water Development

The original plan for the project involved setting a drive pipe that is 2" in diameter and 120' long in the Westfork of Rock Creek. The pipe will fill and drop 40' of elevation into a Rife Hydraulic Ram Pump which pumps the water through 1.5" pipe for 300' of elevation increase over the span of 500' into a Giant Rubber Tire Stock Water Tank.

Considerable time and effort were expended in 2023 by Wyatt, Cameron and local contractors to come up with a feasible design for installation of the ram pump. John and Wyatt walked the area and found a possible location. After revisiting the area and design with the contractors, it was determined that there would be a need for considerable excavation and stream alteration/holding tank to support installation of the ram pump. Even after completing all of the modifications, the contractor, with experience with ram pumps, was concerned there would not be sufficient volume of water to operate the ram pump correctly.

Wet Meadow River Pump Water Development

A location for the River Pump installation was identified near the middle irrigation diversion on Rock Creek. Installation of the pump will be completed in summer of 2023. Wyatt and the summer interns installed the river pump in three different locations. In areas where there was sufficient current for drive the river pump, there was not sufficient water depth for the pump to operate correctly. Conversely, where the water depth was adequate, there was insufficient flow to turn the pump.

Conclusion and Future Plans

The River Pump and Ram Pump were purchased early in UI's involvement with Rinker Rock Creek Ranch, at that time they appeared to be viable methods to provide stock water. Both pumps require "excess" water as energy sources to drive the pumps. After a better understanding of the hydrology of Rock Creek, it appears that flow rates in Rock Creek and, by default, its tributaries are insufficient (Figure 1) to support water driven pumping systems. In conclusion, these pump systems are not viable at Rinker Rock Creek Ranch.

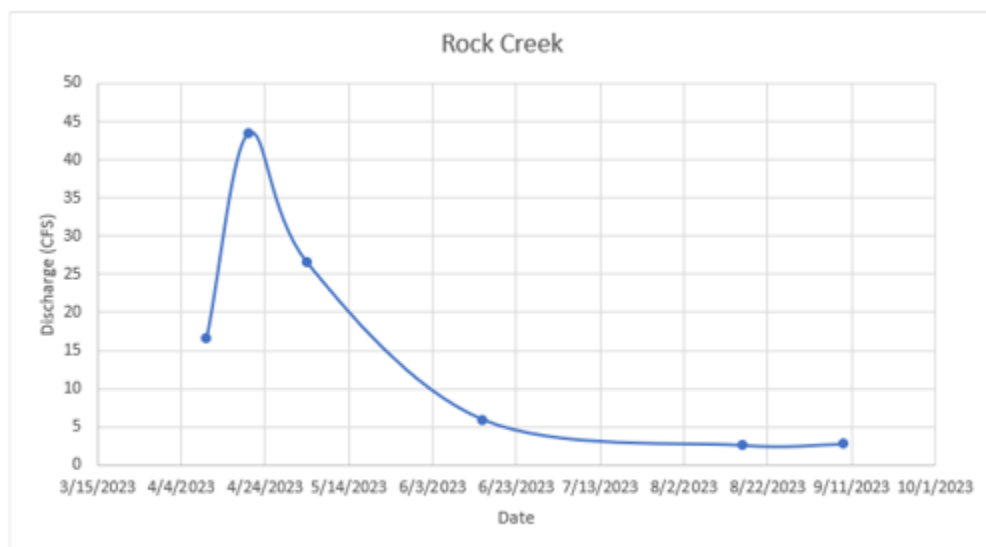


Figure 1. 2023 Water flows in Rock Creek at lower gauge site. Winford et al., 2023

The River and Ram pumps will be transferred to other UI research centers where their operation and application have a better opportunity for success.

Alternative off-stream stock water technology will be considered in the future. Currently, portable solar pump systems or animal powered (nose pump) systems are being considered. These systems would have water flow and quantity needs similar to allowing cattle to water in stream.

Budget and Project Expenditures

Due to the conservative nature of the PI and Co-PI's, there was reluctance to spend money on the project before there was a workable plan for installation. Therefore, funds granted to the project from the David Little Endowment were not expended on materials. There are \$4,875 (the original grant amount) left in the funds as well as \$3,000 from the Rangeland Center. While these funds would be useful to investigate the other off-stream watering options mentioned above, it may be most appropriate to return them to the endowment.