June 4, 2021

Assessing the Potential of Using Shrub Control to Increase Recharge in the Carrizo-Wilcox Aquifer

A Proposal to the Post Oak Savannah Groundwater Conservation District

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This proposal is a companion document to our Final Report for Year 1 activities. In this proposal we are requesting support of an additional year of monitoring and measurements. Background information to this proposal has been provided in our Year 1 Final Report. The proposed data collection effort will continue to strengthen the scientific basis for using brush control as a means for increasing recharge into the aquifer.

Proposed Activities:

1. Continue to make bi-weekly measurements of currently established soil moisture profiles (24 sites) to a depth of about 10 feet. These profiles are established in pastures, woodlands, and open savannahs. The goal is to determine the extent to which soil water differs in these respective sites.
2. Sample soil chloride to a depth of 33 feet at 20 additional locations. This information will compliment measurements that were taken in Year 1. These data will provide estimates of long-term recharge.
3. Install instrumentation for continuous measurements of soil water and soil matric potential at two locations (pasture and woodland) to a depth of about 4 feet. This information will complement our neutron probe (point 1) discreet measurements and provide data for calibrating and validating HYDRUS 1-D modeling.
4. Using remote sensing technology determine the differences in evapotranspiration under the different vegetation types.
5. Continue to monitor weather variables.

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Proposed Budget:

Undergraduate Labor	$6,230	26 weeks of support at 20 hours per week
Undergraduate Fringe	$668	
Graduate Student	$13,600	4 months of support
Graduate Fringe	$1,455	
Drilling Costs	$10,000	
Chloride Analysis	$3,300	
Soil Water and Flux Probes	$7,200	
Travel	$3,000	
Total Direct Costs	$45,453	
Total Indirect	$4,545	10% indirect charge
	$49,998	