Upper Republican Natural Resources District (URNRD) Parallel 41 Project Objectives

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Nebraska's largest area of widespread and persistent groundwater declines is within the three counties encompassed by the URNRD in the southwest corner of the state, despite the district being the first entity in the state and possibly the U.S. to limit groundwater withdrawals for agricultural use. Rapid irrigation development that occurred before the URNRD had the authority in the late 1970's to regulate water use and expansion created a high density of irrigation development that exacerbated the water-demand issues associated with irrigated cropland in a semi-arid climate such as what exists in the district.

Decades of farmers operating in a manner that prevents them from exceeding the groundwater allotments established by the URNRD has led to widespread farmer adoption of irrigation efficiency tools. To date, most of these have related to the physical application of water, e.g. "drops" that apply water near the soil or crop canopy, sprinkler nozzle packages that more efficiently distribute water through the pivot depending on factors such as terrain, etc. But use of tools that help farmers decide when to irrigate has been much more limited due to one primary factor: Lack of a user-friendly, inexpensive method of determining crop-water needs in specific locations throughout the district. Soil moisture probes with telemetry have become fairly popular, but their cost is a deterrent to some, and others wary of using newer technology have been reluctant to use them. The proposed project removes both of those obstacles by providing free or low cost, easily accessible and location specific estimates of ET that can improve irrigation decisions.

All irrigation wells in the URNRD are metered and we are currently in the process of installing telemetry units on all of them that utilize a radio network so farmers and URNRD staff can have access to water usage in near-real time. Comparisons of water applications from irrigators made available by the near real-time flow meter information relayed with crop water needs suggested by ET data made available under the project could help guide district decisions on adjustments to water use regulations. In addition, the URNRD will make the comparisons of actual, average water usage with crop water needs as determined by the evapotranspiration data available on its website, www.urnrd.org, and encourage irrigators to use the data to assess whether they are over-irrigating.