Position Title: Water Management Area Advisor for the Tulare Basin and lower San Joaquin Valley (Tulare, Fresno, Kings, and Madera)

Position: This Water Management Area CE Advisor will work with growers, natural resources managers (water, land), and commodity groups in the Tulare Basin and Lower San Joaquin Valley to support diverse water management, and technological needs emerging from changes in policies and depleting water quantity and quality. The Water Management Area CE Advisor will be expected to conduct a program on extension, applied research and education addressing major challenges around local and regional uses of water. This includes agricultural uses, environmental horticulture, local landscaping and other outdoor uses of water. The candidate is expected to have a Master's or PhD Degree in hydrology, irrigation water management, natural resources management (water and soil), agricultural engineering or related field with a solid understanding of hydrology, soil physics, field data collection and irrigation systems. Familiarity with groundwater hydrology, data collection, soil science, specialty crops grown in California, or other places under Mediterranean climate, is preferred.

Justification: This position primarily addresses the high priority initiatives to Improve Water Quality, Quantity, and Security; Enhance Sustainable Food Systems, Enhance the Health of Californians and California's Agricultural Economy. These counties are at the heart of California's agriculture, and in the most needed place to improve water management given the long term groundwater overdraft and the implementation of the Sustainable Groundwater Management Act (SGMA) that will reduce water availability and lead to the fallowing of a significant amount of agricultural land. There are additional important water quality challenges related to high concentrations of nitrogen in groundwater, environmental water issues impacting water supply and in-stream water availability, and the lack of sufficient and safe drinking in several small, mostly disadvantaged, communities. Water issues in this area are significant and severe, there is a need for a regional academics dedicated to water management to support current and future needs.

Over the past thirty years, most growers have converted their irrigation systems from flood irrigation to microsprinklers or drip but in many cases growers/managers lack the comprehensive understanding on how to best use these systems to achieve acceptable crop responses while avoiding losses and practices potentially damaging to the environment. The large number of small growers in this region represents a large extension challenge. Faced with declining irrigation water quantity and quality as well as upcoming challenges related to the implementation of SGMA, growers in this area need help understanding basic irrigation strategies as well as learning how to use advanced monitoring techniques to improve irrigation efficiency and utilize flood water for groundwater recharge. The Water Management Area Advisor would be expected to conduct applied research and extension programs related to improving irrigation efficiency, making farming decisions with low water allocations, farming with low quality water (high Na/Cl/B), implementations of local groundwater aquifer recharge projects, and increasing understanding of irrigation technology options to improve irrigation decisions.

Extension: The position is responsible for creating and implementing an innovative extension program using traditional and modern tools and communication channels to support the development of new practices and evaluation of existing practices for increasing on-farm water use efficiency and regional flood water storage capacity. The position requires interaction with growers, land owners, water managers, commodity boards, federal and state agency managers and partners, and other clientele groups and managers from the public and/or private sector.

Research: The Water Management Area CE Advisor will develop and deliver a research and extension program to address the needs of the growers and water managers. This may include:

- Development of applied science that supports managed aquifer recharge (MAR) research in agricultural fields, considers soil and cropping system management elements of recharge activities, as well as the know how to initiate, assess and participate in MAR projects in the four counties.
- Development, integration and grower adoption of new irrigation scheduling and management technologies.
- Implementation of State water management programs, including the Sustainable Groundwater Management Act, CV-Salts, and Irrigated Lands Regulatory Program.

ANR Network: The position fits and strengthens current capacity within water resilience and food system resilience clusters. The Water Management Area CE Advisor will support and work closely with other Advisors and CE specialists in the region (e.g. Technology and Innovation for Small Farms Advisor, in Fresno, Tulare, Kings, Madera and Merced Counties, California), campus based specialists, and AES faculty. In addition, they would be expected to be active members of the Water Strategic Initiative, Sustainable Food Systems Initiative, Sustainable Natural Ecosystems Initiative, Water Program Team, and other Program Teams as deemed appropriate.

Network External to ANR: We expect that the Water Management Area CE Advisor will develop strong connections with the California Department of Food and Agriculture, the California Department of Water Resources, the State Water Resources Control Board, Kings, Kaweah and San Joaquin River water agencies, USDA-ARS Water Management Research group in Parlier, state and federal conservation programs (e.g. Healthy Soils Program, SWEEP, EQIP, etc.) and relevant commodity boards (e.g. California Almond Board, Walnut Board, Pistachio Board etc.).

Support: The position will be housed at the Kearney Research and Extension Center. UC ANR Kearney and Westside Research and Extension centers will provide office space, laboratory support, and administrative support. The regional county administrator (Karmjot Randhawa) will provide additional administrative support.

Other support: Potential grant funding for this position could be solicited from CDFA, DWR, NRCS, Bureau of Reclamation, USDA, and local water agencies and commodity boards. Multiple startups in data science and IoT, particularly those located in Silicon Valley and currently involved with UC ANRs The VINE, or The Verde Innovation Network for Entrepreneurship, will also be likely a source of support.

Headquarters and Coverage Area: The position will be based at the Kearney Research and Extension Center and cover Tulare, Kings, Fresno and Madera counties.

Developed and proposed by: This proposal was jointly developed by the California Institute for Water Resources (Doug Parker and Sam Sandoval Solis), the water program team, Karmjot Randhawa, Dan Munk, and the KARE and WSREC directors. The position is a high priority position for WSREC and KARE RECs.