

Position Title: Area Water & Soil Resources Advisor

Position: The Area Water & Soils Advisor will serve as an expert for issues related to soil health and water management, focusing on strategies to meet agricultural, urban, and ecosystem water demands. A Master's degree or PhD in Environmental Science, Hydrologic Science, Soil Science, Water Management and Policy, or related subject is required. Headquartered in Sonoma County, advisor will work in Marin, Mendocino, and Napa Counties.

Justification: Climate change, droughts, catastrophic fires, and competing demands have resulted in water insecurity. The position will address key issues on innovative water usage, i.e., efficiency technology, recycled water, etc., along with the interaction between water capture and soil health. Advisor will provide leadership in water resource conservation and management, soil health, and climate resiliency for agricultural production systems through research, extension, and education activities. Advisor is expected to work closely with Viticulture, Dairy, Livestock, Natural Resources, Specialty Crops, Watershed Management, and Food Systems Area Advisors. Advisor will address water management including water quantity, quality, irrigation, use of reclaimed or recycled water, and rainwater catchment; soil health, as related to soil organic matter, no-till, cover cropping; and climate adaptation including sustainable and resilient cropping systems in the face of climate change fueled droughts, floods, and fires. Specific areas of need and potential focus include:

- Local and regional groundwater management for the six Groundwater Sustainability Agencies (GSAs) in the assignment area resulting from the California Sustainable Groundwater Water Management Act (SGMA);
- Expertise and education on the chemical and physical soil properties which are integral to the use of amendments including compost to improve infiltration, nutrient uptake, and water and amendment use efficiency.
- Adaptations to the frequency and intensity of extreme weather and its increased risk of catastrophic wildfires, floods, and droughts with threats to crops, fish and wildlife, and community well-being.
- Collaboration with and coordination of CDFA's Healthy Soils and SWEEP programs being conducted.

ANR's footprint in the North Coast has historically supported commodity advisors who focus their programs exclusively on perennial crops, vineyards, oil olives and apples, and livestock production, which in 2019 were valued at \$2.3 billion across the assignment area. This position provides an opportunity for ANR to support a position which addresses the two most important disciplines directly related to climate change in the region's agriculture cropping systems.

This position will support agriculture production, incentivizing practices that will result in net benefit for the environment through innovation, efficient management, and science. The advisor will assist agriculture producers and natural resource management to meet water demands through innovation. The advisor will conduct research to understand and develop solutions to increase the resilience of agriculture, communities, and natural ecosystems to extreme weather and climate change. The advisor will assist farmers and ranchers in implementing climate-smart water and soil management practices, reducing greenhouse gas emissions in agriculture systems and livestock and natural resources. Position can expand public awareness of climate risks and effective adaptation strategies. As a result, communities are better prepared and able to deal with the growing risk of fire, droughts, and flood hazards. Our work leads to a safer, more climate-resilient California.

Extension: The advisor will lead outreach efforts to expand innovative uses of amendments, including compost, to improve infiltration and nutrient uptake and improve both water and amendment use efficiency. Advisor will target growers and grower organizations in each county to receive the information on sustainable water usage, drought, and climate change as it relates to water efficiency and soil health. Key to the position will be the development of extension outreach methods that lead to adoption of sustainable practices that improves soil health

and increases water storage and holding capacity on agriculture lands across the four-county region. This will include outreach programs in implementing climate smart agricultural practices involving soil and water to address regional and state-wide climate action goals. Additional stakeholders will include the county water agencies – which coordinate the GSAs – and other local and state regulatory agencies that address groundwater and surface water use and sustainability including the Irrigated Lands Regulatory Programs (ILRP).

Research: The advisor will conduct research in innovative water use – storage, reuse, and recycling; with the goal of increasing groundwater and surface water capture and usage. The advisor will work to increase grower adoption of the use of cost-effective remote sensing tools that capture real-time plant, soil and atmospheric demand data which are integrated into user-friendly platforms to drive water use decisions. The advisor will conduct research to determine the potential for annual carbon capture and storage in the different climates found in the North Coast to achieve the objectives of climate smart agriculture. The advisor will work across disciplines, with advisors and specialists, to address climate risks and effective adaptation strategies. Impacts would result in a safer, more climate-resilient California.

ANR Network: This position would significantly augment the capacity of the ANR network, working across disciplines, collaborating with LAWR, Plant Science, Viticulture and Enology, Livestock and Natural Resources advisors CE Specialists, and AES faculty in projects addressing crop water needs and natural resource/environmental flows. The advisor will work closely with local county advisor colleagues as well as CE advisors with water management and soils-based programs including advisors in the Sacramento and San Joaquin Valley with programs in nutrient management and soil health/soil quality. Additional ANR contacts will be gained by participating in ANR Program Teams including Water Resources, Pomology, and Viticulture.

Network External to ANR: The advisor is expected to work in a technical advisory capacity with state, regional and local agencies. These agencies include the North Coast, Central Valley, and San Francisco Bay Regional Water Quality Boards, California Department of Water Resources, and the Irrigated Lands Regulatory Programs in each region. Additional agencies include the Sonoma County Water Agency, and water resource agencies in Napa and Mendocino Counties, as well as USDA-Natural Resource Conservation Service (NRCS), Resource Conservation Districts (RCD), and industry groups, such as local Farm Bureaus and others.

The Sonoma Water Agency and Marin Municipal Water Agency provide support for water related programs at UCCE Sonoma and Marin, respectively. The Office of Environmental Farming & Innovation in the California Department of Food and Agriculture supports programs in the North Coast and can provide support for projects initiated by the advisor serving the four-county region. UC ANR is currently collaborating with CDFA on the Healthy Soils Initiative (HIS) and the State Water Efficiency & Enhancement Program (SWEEP). Advisor will continue work completed by the UC ANR CES, working with growers and producers on implementing climate smart agriculture practices to improve soil health and water holding capacity.

Support: County support is excellent. Sonoma provides individual office space, a laboratory and warehouse for project and storage space as well as field and administrative county-paid support staff.

Other support: Sonoma Water supports this position and is a key stakeholder in Sonoma County. The research conducted by the advisor with stakeholders will support the applicable demonstration programs and projects of the USDA-NRCS and RCDs.

Headquarters and Coverage Area: Headquartered in Sonoma County, advisor will provide cross county service to Marin, Mendocino, and Napa Counties.

Developed and proposed by: Stephanie Larson, UCCE Sonoma County Director, developed this position with County Directors in Marin/Napa and Mendocino Counties. Input and support were provided by local agriculture producers and county water agencies, and ANR Water and Viticulture Program Teams.