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ARIZONA TRI-UNIVERSITY RECHARGE & WATER RELIABILITY PROJECT

Escalating drought over the past two decades has led to growing concerns regarding water quantity and quality for Arizona’s communities. At the request of the Arizona Department of Water Resources, a team of researchers from the University of Arizona (UArizona), Arizona State University (ASU), and Northern Arizona University (NAU) will study locations and methods for protecting and enhancing groundwater recharge across the state.

- More than 90% of precipitation that falls as rain and snow in Arizona evaporates before it enters a stream or recharges the groundwater
- Capturing this water before it escapes to the atmosphere and encouraging it to percolate into the ground to replenish aquifers (enhanced recharge) can increase water supplies for communities and support ecosystems

PROJECT GOALS

- Identify ways to enhance and protect water supplies across the state by capturing precipitation before it evaporates or is used by plants
- Focus exclusively on water supplies *that would not otherwise have reached a natural channel*
- Identify locations for enhanced recharge for human and wildlife needs
- Identify land and vegetation management practices to enhance water availability
- Develop a system for prioritizing recharge sites

For more information, please contact:

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METHODS

- Engage stakeholders, including land and water management agencies and tribal authorities, through workshops and meetings
- Map soils and surface geology to identify areas where water can readily recharge aquifers
- Estimate current and projected future precipitation, evaporation, recharge and surface water runoff across the state by integrating observations, remote sensing products and hydrologic models
- Estimate potential changes in water availability resulting from wildfire, forest, and vegetation management practices in current and future climates
- Assess rainwater harvesting and green infrastructure opportunities to enhance recharge using storm water generated through increased urbanization

PRODUCTS

Findings report will include:

- Potential for enhancing urban recharge associated with rainwater and floodwater harvesting
- Influence of forest and rangeland management options to generate additional water for recharge
- Implications of climate change for both runoff and recharge in the future
- Identification of potential partnerships with stakeholders and land management agencies
- Digital maps of possible locations for enhanced recharge, potential management options for enhancing recharge, and proximity to existing and potential groundwater users and important environmental features
- Description of the processes and tools that can be used to strategically prioritize the areas where recharge potential can be enhanced; links to data, tools and models used
- Annotated review of existing literature supporting the work of this project

MEET THE TEAM

Project Investigator: Kathy Jacobs, *Director of the Center for Climate Adaptation Science & Solutions within the Arizona Institute for Resilience (AIR); Professor, Department of Environmental Science, UArizona*

Project Manager: Dr. Neha Gupta, *Assistant Research Professor, AIR, UArizona*

Resilient Rivers, LLC

Dr. Holly Richter, *Principal*

ASU Team

Lead: Dr. Giuseppe Mascaro, *Associate Professor, School of Sustainable Engineering & the Built Environment*

Dr. Tianfang Xu, *Assistant Professor, School of Sustainable Engineering & the Built Environment*

NAU Team

Lead: Dr. Abe Springer, *Professor, School of Earth & Sustainability*

Dr. Temuulen Sankey, *Associate Professor, School of Informatics, Computing, & Cyber Systems*

UArizona Team

Dr. Ali Behrangi, *Distinguished Scholar and Professor, Hydrology & Atmospheric Sciences*

Dr. Patrick Broxton, *Assistant Research Professor, School of Natural Resources & the Environment*

Dr. Ty Ferre, *Distinguished Professor, Hydrology & Atmospheric Sciences*

Dr. Jia Hu, *Associate Professor, School of Natural Resources & the Environment; Assistant Dean of Graduate Education, College of Agriculture, Life & Environmental Sciences; Director, Climate Adaptation Science Center*

Dr. Willem van Leeuwen, *Professor and Interim Director, School of Natural Resources & the Environment*

Dr. Yoga Korgaonkar, *Assistant Professor of Practice, School of Geography, Development & Environment*

Dr. Guo-Yue Niu, *Associate Professor, Hydrology & Atmospheric Sciences*

Dr. Cassie Zhang, *Assistant Research Professor, School of Natural Resources & the Environment*