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**GROUNDWATER MODELING OF ARTIFICIAL RECHARGE TO SUPPORT STREAMFLOW
AND GROUNDWATER MANAGEMENT OBJECTIVES FOR A RIPARIAN CORRIDOR
IN THE UPPER SAN PEDRO RIVER BASIN**

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ABSTRACT: The San Pedro Riparian National Conservation Area (SPRNCA), established by Congress in 1988 to preserve and enhance the exceptional riparian ecosystem along the Upper San Pedro River in Southeastern Arizona, faces threats of diminished baseflows as a result of long-term groundwater pumping in the Upper San Pedro River Basin. Groundwater currently supports virtually all human water uses in the basin, as well as dry-season baseflows in the SPRNCA, and human demands are anticipated to increase as the basin's population grows. A mix of diverse partners including local and federal government agencies, NGOs, and other stakeholders are undertaking a collaborative groundwater modeling effort to define the best strategy for near-stream artificial recharge by infiltration to support desired streamflow and groundwater conditions within the SPRNCA in the presence of anticipated future basin-wide groundwater demands. The model incorporates projected population growth by including corresponding estimated growth in groundwater demand from 2010 to 2100. Artificial recharge by infiltration is simulated at a suite of near-stream sites in an attempt to meet pre-determined baseflow objectives for various sites within the SPRNCA. Artificial recharge is also simulated at various near-stream sites in an attempt to match pre-determined groundwater-level objectives in the SPRNCA. The results of the two separate groups of simulations are then combined to determine the optimal recharge site and rate of recharge to support both surface water and groundwater objectives within the SPRNCA. This information will be available to support water managers and decision-makers in their efforts to secure water sources, optimize recharge rates and locations, and develop the required infrastructure for future artificial recharge projects to effectively mitigate pumping-induced effects within the SPRNCA.

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