



TECHNOLOGY NEWS

RECHARGING THE SAN PEDRO

The San Pedro is one of the last large, undammed rivers in the Southwest that flows year-round in many of its reaches. It winds its way for 43-mi through the cottonwood corridor of the San Pedro Riparian National Conservation Area, which provides critical habitats for millions of migrating birds and other wildlife.

These streamside forests rely on the same limited water resources as other user groups in the region: among them local communities, large copper mines, irrigated agriculture, and Army base Fort Huachuca. Frequent drought conditions and regional groundwater withdrawals present an ongoing challenge to sustaining the San Pedro. To address this concern, a network of eight aquifer protection and recharge projects are under development along 25-mi of the river, adjacent to the conservation area. The effort is led by the Cochise Conservation and Recharge Network, a voluntary collaboration between the nearby cities of Sierra Vista and Bisbee, along with Cochise County, The Nature Conservancy, and the Hereford Natural Resource Conservation District.

The project sites encompass 6,344-acres and are currently recharging approximately 2,900-acre-ft/year, while more than 2,500-acre-ft/year of historic pumping has

groundwater model was used to determine how much recharge is required at specific near-stream locations to maintain desired groundwater and stream flow conditions.

Use of this water requires the accurate quantification and partitioning of “new” urban runoff from pre-development flow volumes as well as infrastructure design that allows flows approximating pre-development stormwater runoff to continue to the river. This can generally be achieved by complete capture of stormwater flows that occur in response to smaller precipitation events that would not have resulted in runoff under pre-development conditions, and partial capture of runoff from the higher precipitation events.

Surface water modeling for a stormwater recharge project receiving runoff from urban areas within the City of Sierra Vista has been completed. Final engineering will be completed later this year. The MODFLOW groundwater model determined that if a minimum of 150-acre-ft annually is recharged at this location on average, significant baseflow benefits to the San Pedro would result in the adjacent river reach. Surface water modeling estimated that between 676- to 790-acre-ft of urban enhanced runoff is generated annually upstream of the recharge project site and is available for the project.

Construction is slated to begin in 2021. For more information, contact Holly Richter, The Nature Conservancy; hrichter@tnc.org.



A network of projects along the San Pedro, such as the Palominas Upstream Basin Weir Wall, aim to facilitate groundwater recharging.
THE NATURE CONSERVANCY PHOTO

FLOODPLAINS BY DESIGN

In January 2009, the Puyallup River crested at over 16,000-ft³ and required evacuation of 26,000 people from the City of Orting, Wash., one of the largest evacuations in the state's history. In 2014, the day before Thanksgiving, the Puyallup again crested above 16,000-ft³, yet only a handful of residents needed to evacuate thanks to the Calistoga Reach Project.

The project was one of the first projects partly funded through the innovative Floodplains by Design Program, a public-private partnership focused on bringing stakeholders and river and land managers together to develop and implement multi-benefit, watershed-scale plans that reestablish floodplain functions while protecting communities and industry in major river corridors.

Building from Calistoga's success, local partners are implementing 22 levee setbacks on the Puyallup River with Floodplains for the Future, a river basin-scale program to reduce flood risks, restore fisheries, and protect agriculture.

Similarly, in Central Washington, the Yakima River Corridor Plan is using the Floodplains by Design approach to reduce flood hazards and improve the Yakima Greenway as a recreational resource.

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The project sites encompass 6,344-acres and are currently recharging approximately 2,900-acre-ft/year, while more than 2,500-acre-ft/year of historic pumping has been retired.

been retired. Fort Huachuca made funding requests through the Army's Compatible Use Buffer Program, which enabled The Nature Conservancy to acquire four of these project sites and then transfer them to Cochise County for long-term operation.

Available water sources for groundwater recharge are either treated effluent or “new” stormwater runoff that would not have occurred under pre-development conditions, such as that generated from urban areas. A spatially explicit MODFLOW



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