

UPPER SAN PEDRO PARTNERSHIP

**A Consortium of Agencies and Organizations
Dedicated to the Protection and Preservation of
the People and Natural Resources of the Sierra
Vista Sub-watershed of the Upper San Pedro River**

Upper San Pedro Conservation Plan 2002 Progress Report



**Progress
Report
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INTRODUCTION

The Upper San Pedro Partnership (Partnership) is a consortium of 20 agencies and organizations that **“(1) own land and/or (2) control land or water, and/or (3) make policy with regard to land or water use in the Sierra Vista sub-watershed of the Upper San Pedro River Basin and will provide significant resources to help the Partnership accomplish its purpose; or agencies and organizations that will provide significant technical or financial resources to help the Partnership accomplish its purpose”**. This broad coalition includes local agencies, Federal agencies, State agencies and private organizations that are working together to ensure that a long-term ground water supply is available to meet the needs of both current and future residents, as well as the San Pedro Riparian National Conservation Area (SPRNCA). The Partnership is a voluntary, collaborative effort that brings together scientists, agency heads and political leaders to develop guidelines for the development of sound water policy that will meet the

needs of area residents and the SPRNCA.

Partnership members believe that using the best available scientific research to understand the intricacies of basin hydrology will help identify conservation actions that will have the greatest impact with the least cost. Knowing how water moves underground and how the aquifer and the San Pedro River interact will also help prioritize conservation options. To that end, the Partnership has sponsored several scientific studies that will be completed over the next few years (See Planning Activity Progress Report).

While studies are being completed, the Partnership has committed itself to the development of a “working” Upper San Pedro Conservation Plan. The Conservation Plan will evaluate and catalog existing member agency projects, synthesize ongoing or completed studies, and prioritize potential conservation actions. The Plan will be reviewed and updated on an annual basis as more information is gleaned from the studies.

The Conservation Plan will identify the most promising alternatives to reduce reliance on ground water reserves. The strategies that are being explored by the Partnership include the following:

- **Reducing water consumption** while continuing to meet the needs of people and nature by using conservation technologies, public policy and encouraging personal responsibility.
- **Reclaiming used water resources**, otherwise wasted, by irrigating with treated effluent or recharging it into the aquifer and reusing gray water.
- **Augmenting existing water resources** by harvesting and recharging storm water through erosion/flood control projects and general watershed improvements or by importing water from outside the area.

Given what is already known about the importance of preserving ground water resources, Partnership members are committed to continuing their individual conservation efforts while the Conservation Plan is being developed. Many of those efforts are noted in the following pages.

PROGRESS TO DATE

The Partnership has identified 74 different options, within the broad strategies, which could ultimately be included in the Conservation Plan. A feasibility/cost/benefit study is underway to determine which options would be most effective and affordable. Alternatives include everything from public education to plumbing retrofits to water use restrictions. Alternatives affecting every category of water user have been included—residential, commercial, agricultural, recreational and institutional.

Preliminary evaluation of the options is complete and final results of the study are due in the fall of 2002. A separate study is being conducted to evaluate the water consumed by the SPRNCA and to determine if there are management options that would reduce that consumption without adversely affecting the purpose of the SPRNCA. This study will be completed in 2004. (See *Planning Activity Progress Report for more details on these studies*).

In the meantime, Partnership members are continuing their individual conservation efforts and working to implement new programs that would reduce consumption, reclaim used water resources and augment existing water resources. Water savings have

not been quantified for all of the projects and programs, but those that have been quantified indicate that the savings totals over 5,826 acre-feet, or 1.9 billion gallons, per year.

REDUCE CONSUMPTION STRATEGY

The Partnership has identified 42 potential options for reducing water consumption. These options are included in the feasibility/cost/benefit study slated for completion in the fall of 2002 (See *Planning Activity Progress Report for more details on this study*).

Current member agency projects under this strategy are listed below. Water savings for the projects and programs that have been quantified indicate that the savings under this strategy will be 2,426 acre-feet per year (AF/YR) by the end of 2002.

Public education

- The City of Sierra Vista, Fort Huachuca, Cochise County and several private water companies established a program to educate the public on water conservation. It was put in place through the pooling of resources by several public and private agencies prior to the existence of the Partnership. The "Water Wise" Program is administered through contracts with the University of Arizona Extension Service and provides

public information and education on water conservation. Partnership consultants have estimated that the existing program will encourage water conservation practices that result in saving 270 AF/YR.

- Cochise County developed and published a booklet to inform developers of water conservation measures.
- Cochise County awarded \$20,000 to the University of Arizona to help fund a Rural Water Study of per capita water use in rural areas. This information will help the Partnership evaluate potential water saving measures.
- Sierra Vista printed and distributed several thousand copies of a new Water Conservation Guide, Leak Detection Guide, and 5,000 Calendars with monthly water conservation information.
- Sierra Vista has contributed \$279,000 in administration and fiscal management services necessary to help the Partnership accomplish its goals and keep the public informed.

Residential/commercial uses

- Cochise County enforces the Arizona Water Efficient Plumbing Act of 1992 in areas around Sierra Vista and Benson.
- Cochise County is enforcing Health Department Regulations on the use of composting toilets and gray water use in lieu of conventional septic Systems.
- Cochise County requires dust, erosion, and run-off control measures, as well as, water conservation measures for clearing

and development proposals over an acre in size.

- Sierra Vista requires the use of low flow plumbing fixtures in any new construction.
- Sierra Vista requires the use of waterless urinals in all new commercial facilities.
- Sierra Vista implemented a program to replace urinals in all City facilities with waterless models. This \$12,000 project is estimated to save 2.75 AF/YR.
- Sierra Vista helped replace high flow fixtures and repair leaks in 125 low-income homes. They also paid \$100 rebates to 200 homeowners who replaced high flow fixtures. This \$40,000 program is expected to save 13 AF/YR.
- Sierra Vista has spent \$5,000 to inventory, monitor, and audit water use in City facilities to identify conservation opportunities. Several leaks were located and repaired for an estimated savings of 1 AF/YR.
- Sierra Vista requires all new commercial car washes to recycle 75% of the water utilized.
- Sierra Vista prohibits using misters in any commercial developments.
- Sierra Vista limits the size of any artificial lakes, ponds or other water features to 500 square feet or less on any new developments.
- Sierra Vista prohibits turf on new governmental, commercial, and industrial developments; limits turf on new multi-family developments to 20% of the landscaped area; and limits use of turf to 200 square feet in front and side yards on single-family residential development (no restriction in rear yard areas).
- Sierra Vista requires that low

water use, draught tolerant landscape plants to be used at commercial sites and requires salvage of certain native plant species on any developments over one acre in size.

- Fort Huachuca contributed \$144,000 in FY 2001 to water conservation projects on and off the fort.
- Fort Huachuca demolished over 1 million square feet of WW II wood structures since 1992 and removed or shut-off leaky water and sewer systems.
- Fort Huachuca restricts fundraiser car washes to two locations on post that have collection systems to return wash water to the treatment plant for reuse or recharge.
- Fort Huachuca has spent \$600,000 since 1998 to replace old, high water use plumbing fixtures with 350 waterless urinals, install 1500 1.5 gallon per minute shower heads, and numerous on-demand faucets and waterless Purell dispensers.
- Fort Huachuca installed 280 horizontal axis clothes washers in single soldier housing and other high use commercial areas since the beginning of FY 2001.
- Fort Huachuca implemented a policy in April 2000 to use refrigerated air-conditioning in all new construction and renovation projects rather than evaporative cooling.
- Fort Huachuca requires desert landscaping in all new construction and has begun a plan to xeriscape at least an acre per year of existing landscaping.
- Fort Huachuca initiated a policy in 1994 to restrict all watering to low-evaporation times of the day and restricted residential users to lawn watering only

four hours per week and two months per year.

- Fort Huachuca requires military and tenant units, that are adding personnel, to fund water conservation to mitigate direct and indirect water use of employees and family members.
- Fort Huachuca completed a leak survey and repair project for its water system in 1997, and adjusted its reservoir instrumentation to reduce pumpage in 1999. A leak detection and repair project for its sewer system began in FY 2000.
- Fort Huachuca began a project to replace older housing units, which will include low flow plumbing fixture units, air conditioning and some xeric landscaping to save water. Approximately 200 units are complete and about 100 are in progress. The 1100 housing unit project will be completed by 2010.
- Bureau of Land Management (BLM) retired and restored sand and gravel operations within the SPRNCA to reduce erosion, improve water quality and to stabilize stream channels.

Recreational uses

- Cochise County adopted new zoning regulations to require new golf courses to conserve water.
- Fort Huachuca operates the only treated effluent irrigated golf course in the region. It has been irrigated with treated effluent since 1969.
- Sierra Vista requires golf courses to use low-water type turf and limits turf to 5 acres per hole.
- Sierra Vista completed construction of a new \$8 million indoor swimming facility to replace a large outdoor swimming pool with evaporative losses and leaks estimated at 1.4 AF/YR.

Irrigated agricultural use

- Fort Huachuca, in cooperation with BLM and The Nature Conservancy (TNC), has purchased one conservation easement near the river at a cost of \$760,000 to reduce pumping for irrigation by 630.8 AF/YR.
- TNC purchased property adjacent to the river, which will reduce pumping for irrigation by 508.2 AF/YR, and will be working with Department of Defense and BLM to establish a conservation easement there.
- BLM placed farm fields into non-use when they acquired the SPRNCA for an estimated water savings of 12,000 to 18,000 AF/YR.
- BLM, since 1991, purchased land and conservation easements in order to retire high water consumptive uses and to reduce high-density development. Estimated water savings is 1000 AF/YR.

RECLAIMING USED WATER STRATEGY

The Partnership has identified 13 options for reclaiming water resources by reusing effluent in lieu of ground water or recharging it back into the ground water. These options are included in the benefit/cost/benefit study slated for completion in the fall of 2002. (See *Planning Activity Progress Report for more details on this study*).

Two Partnership members—the City of Sierra Vista and Fort Huachuca—have completed their own studies and are proceeding with projects that are expected to begin saving 3,400 AF/YR by

mid 2002. These projects are outlined below.

Effluent reuse

- Fort Huachuca began using effluent in 1969 to irrigate its parade field, outdoor sports complex, academic complex, and golf course. A new evapotranspiration monitoring system was installed in 1999 to make that water use more efficient. Funding to update the treated effluent distribution system was appropriated by Congress in late 2001 and construction of the upgrade will begin in late 2002.

Effluent recharge

- Sierra Vista began construction on its \$7.5 million effluent recharge project in the summer of 2000. Initially, this facility is expected to recharge about 2,400 AF/YR. Recharge capacity of this facility is about 4,000 AF/YR.
- Fort Huachuca began construction of its \$6 million effluent recharge project. The Fort expects to be recharging/reusing all of its effluent by the second quarter of 2002. This will reduce the demand on the supply system (aquifer) by an estimated 1,000 AF/YR and recover about 60% of the water pumped by Fort Huachuca.

AUGMENTING WATER RESOURCES STRATEGY

The Partnership has identified eight options for augmenting water resources by increasing storm-water recharge or importing water from outside the area.

These options are included in the feasibility/cost/benefit study slated for completion in the fall of 2002. (See *Planning Activity Progress Report for more details on this study*).

Three Partnership members—the City of Sierra Vista, Cochise County and Fort Huachuca—have completed their own studies and are proceeding with projects intended to increase storm-water recharge. These projects are listed below along with the efforts of other Partnership members.

Storm water recharge

- Sierra Vista adopted a Surface Water Plan in 1988, which planned for the construction of several detention basins to reduce peak discharge rates from storms. Sierra Vista and the Cochise County Flood Control District have constructed five of thirty planned detention basins. Others have been constructed, or are being planned, as part of major developments. The Partnership's planning activities will quantify the recharge benefit and determine if a more aggressive construction program should be pursued. The feasibility of increasing the basins recharge capabilities by deepening them to function as partial retention basins will also be explored. Installing infiltration galleries in the basins to reduce evaporation is also being investigated.
- Cochise County Flood Control District is installing check-dams and other improvements to control erosion in two arroyos. These improvements will have the secondary benefit of slowing water flows and increasing

recharge. The projects should be completed in 2003. Monitoring wells have been installed to measure the recharge. There will also be a study to determine if this is a cost effective way to augment water resources by improving recharge conditions.

- Fort Huachuca began a five-year project in FY 2001 to improve recharge and reduce erosion along arroyos in their east range area. The project is anticipated to recharge up to another 500 acre feet of urban runoff, from both the Fort's built up area and parts of Sierra Vista, each year. The cost of the project is \$350,000 per year.
- Fort Huachuca will also collect urban runoff up to the capacity of its treatment facility, so that recharge can be increased further. This project is expected to recharge 250 AF/YR of urban runoff to the aquifer annually.
- BLM reintroduced beaver to the San Pedro River to increase infiltration into the shallow aquifer, help stabilize stream banks and improve wildlife habitat.
- BLM completed an erosion control project north of Highway 82

to stabilize arroyos and bare land. The project is expected to increase infiltration, reduce run-off, and reduce evaporation.

Watershed improvements

- U.S. Forest Service initiated programs to improve grazing practices and riparian enclosures in the upland portions of the watershed.
- Fort Huachuca began a five-year project in FY2001 to improve recharge and reduce erosion along arroyos in their east range area. This project will include other watershed improvements, such as re-vegetation.
- Fort Huachuca began a mechanical fuel thinning program in 2000 to reduce fire hazards and improve watershed conditions of the Fort. This program will continue through 2002.
- BLM is restoring farm fields to native grasses in order to reduce brush invasion, reduce run-off, reduce erosion, increase infiltration and improve wildlife habitat.

- BLM constructed 30 miles of fencing around the SPRNCA to reduce erosion caused by cattle and unauthorized vehicle trespass
- BLM conducts prescribed burns to reduce brush invasion, lower the risk of catastrophic fire, and increase grassland health. The burns also help reduce erosion, run-off and evaporation.
- BLM assisted Sierra Vista in replacing irrigated fields with native grasses to eliminate the need to irrigate. This action also reduced run-off and evaporation.
- BLM mows fuel breaks and removes dead and down timber to prevent catastrophic wildfire. The fuel breaks also protect the riparian habitat that helps maintain stream banks and channels.
- BLM closed the SPRNCA to mineral development, off road vehicles and restricted livestock grazing to help restore riparian and upland habitat. This action also resulted in improved infiltration, reduced run-off, reduced erosion, and stabilization of the stream channel and arroyos.