# Appendix B – Public Law 108-136 (Section 321)

## SEC. 321. COOPERATIVE WATER USE MANAGEMENT RELATED TO FORT HUACHUCA, ARIZONA, AND SIERRA VISTA SUBWATERSHED.

(a) LIMITATION ON FEDERAL RESPONSIBILITY FOR CIVILIAN WATER CONSUMPTION IMPACTS.—
(1) LIMITATION.—For purposes of section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1536), concerning any present and future Federal agency action at Fort Huachuca, Arizona, water consumption by State, local, and private entities off of the installation that is not a direct or indirect effect of the agency action or an effect of other activities that are interrelated or interdependent with that agency action, shall not be considered in determining whether such agency action is likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat.

(2) VOLUNTARY REGIONAL CONSERVATION EFFORTS.—Nothing in this subsection shall prohibit Federal agencies operating at Fort Huachuca from voluntarily undertaking efforts to mitigate water consumption.

(3) DEFINITION OF WATER CONSUMPTION.—In this subsection, the term ''water consumption'' means all water use off of the installation from any source.

(4) EFFECTIVE DATE.—This subsection applies only to Federal agency actions regarding which the Federal agency involved determines that consultation, or reinitiation of consultation, under section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1536) is required with regard to an agency action at Fort Huachuca on or after the date of the enactment of this Act.

(b) RECOGNITION OF UPPER SAN PEDRO PARTNERSHIP.—Congress hereby recognizes the Upper San Pedro Partnership, Arizona, a partnership of Fort Huachuca, Arizona, other Federal, State, and local governmental and nongovernmental entities, and its efforts to establish a collaborative water use management program in the Sierra Vista Subwatershed, Arizona, to achieve the sustainable yield of the regional aquifer, so as to protect the Upper San Pedro River, Arizona, and the San Pedro Riparian National Conservation Area, Arizona.

(c) REPORT ON WATER USE MANAGEMENT AND CONSERVATION OF REGIONAL AQUIFER.—

(1) IN GENERAL.—The Secretary of [the] Interior shall prepare, in consultation with the Secretary of Agriculture and the Secretary of Defense and in cooperation with the other members of the Partnership, a report on the water use management and conservation measures that have been implemented and are needed to restore and maintain the sustainable yield of the regional aquifer by and after September 30, 2011. The Secretary of the Interior shall submit the report to Congress not later than December 31, 2004.

(2) PURPOSE.—The purpose of the report is to set forth measurable annual goals for the reduction of the overdrafts of the groundwater of the regional aquifer, to identify specific water use management and conservation measures to facilitate the achievement of such goals, and to identify impediments in current Federal, State, and local laws that hinder efforts on the part of the Partnership to mitigate water usage in order to restore and maintain the sustainable yield of the regional aquifer by and after September 30, 2011.

(3) REPORT ELEMENTS.—The report shall use data from existing and ongoing studies and include the following elements:

(A) The net quantity of water withdrawn from and recharged to the regional aquifer in the one-year period preceding the date of the submission of the report.

(B) The quantity of the overdraft of the regional aquifer to be reduced by the end of each of fiscal years 2005 through 2011 to achieve sustainable yield.

(C) With respect to the reduction of overdraft for each fiscal year as specified under subparagraph (B), an allocation of responsibility for the achievement of such reduction among the water-use controlling members of the Partnership who have the authority to implement measures to achieve such reduction.

(D) The water use management and conservation measures to be undertaken by each water-use controlling member of the Partnership to contribute to the reduction of the overdraft for each fiscal year as specified under subparagraph (B), and to meet the responsibility of each such member for each such reduction as allocated under subparagraph (C), including—

(i) a description of each measure;
(ii) the cost of each measure;
(iii) a schedule for the implementation of each measure;
(iv) a projection by fiscal year of the amount of the contribution of each measure to the reduction of the overdraft; and
(v) a list of existing laws that impede full implementation of any measure.

(E) The monitoring and verification activities to be undertaken by the Partnership to measure the reduction of the overdraft for each fiscal year and the contribution of each member of the Partnership to the reduction of the overdraft.

(d) ANNUAL REPORT ON PROGRESS TOWARD SUSTAINABLE YIELD.—

(1) IN GENERAL.—Not later than October 31, 2005, and each October 31 thereafter through 2011, the Secretary of the Interior shall submit, on behalf of the Partnership, to Congress a report on the progress of the Partnership during the preceding fiscal year toward achieving and maintaining the sustainable yield of the regional aquifer by and after September 30, 2011.
(2) REPORT ELEMENTS.—Each report shall include the following:
(A) The quantity of the overdraft of the regional aquifer reduced during the reporting period, and whether such reduction met the goal specified for such fiscal year under subsection (c)(3)(B).
(B) The water use management and conservation measures undertaken by each water-use controlling member of the Partnership in the fiscal year covered by such report, including the extent of the contribution of such measures to the reduction of the overdraft for such fiscal year.
(C) The legislative accomplishments made during the fiscal year covered by such report in removing legal impediments that hinder the mitigation of water use by members of the Partnership.

(e) VERIFICATION INFORMATION.—Information used to verify overdraft reductions of the regional aquifer shall include at a minimum the following:

(1) The annual report of the Arizona Corporation Commission on annual groundwater pumpage of the private water companies in the Sierra Vista Subwatershed.
(2) The San Pedro base flow monitoring record of the Charleston flow gauge of the United States Geological Survey.
(3) Current surveys of the groundwater levels in area wells as reported by the Arizona Department of Water Resources and by Federal agencies.

(f) SENSE OF CONGRESS.—It is the sense of Congress that any future appropriations to the Partnership should take into account whether the Partnership has met its annual goals for overdraft reduction.

(g) DEFINITIONS.—In this section:
(1) The term ''Partnership'' means the Upper San Pedro Partnership, Arizona.
(2) The term ''regional aquifer'' means the Sierra Vista Subwatershed regional aquifer, Arizona.
(3) The term ''water-use controlling member'' has the meaning given that term by the Partnership.

# Appendix C – List of Partnership Reports and Other Documents Consulted to Calculate Management-Measure Water Yields


Report on Feasibility of Groundwater Recharge and Sewage Reuse in the Sierra Vista Subwatershed. ASL Hydrologic & Environmental Services, for City of Sierra Vista and U.S. Department of Interior Bureau of Reclamation. June 30, 1995.

Cost Share Agreement between Sierra Vista. Bureau of Reclamation and Arizona Water Protection Fund. 1996.

Groundwater Flow Model Scenarios of Future Groundwater and Surface Water Conditions: Sierra Vista Subwatershed of the upper San Pedro Basin- Southeastern Arizona- Supplement to Modeling Report 10. Arizona Department of Water Resources Hydrology Division. November, 1996.

A Groundwater Flow Model of the Sierra Vista Subwatershed of the Upper San Pedro Basin - Southeastern Arizona, Modeling Report No. 10. Arizona Department of Water Resources Hydrology Division. December 1996.

Rapid Infiltration Basin Recharge System Design Concept Report for Sierra Vista Water Reclamation Facility. ASL Hydrologic & Environmental Services, for City of Sierra Vista. November 26, 1997.

Wetland Wastewater Polishing System- Final Design Concept Report- Sierra Vista Water Reclamation Facility. ENTRANCO (for City of Sierra Vista). February 10, 1998.

Biological Assessment for the Sierra Vista Water Reclamation Facility Effluent Recharge Project. U.S. Department of Interior U.S. Bureau of Reclamation, for Sierra Vista. August 1998.

Environmental Assessment for the Sierra Vista Water Reclamation Facility Effluent Recharge Project. Fluid Solutions, ENTRANCO, ASL Hydrologic and Environmental Services, and Department of Interior, U.S. Bureau of Reclamation, for City of Sierra Vista. December 1998.

City of Sierra Vista Water Reclamation Facility Final Report. Fluid Solutions, for City of Sierra Vista. May 13, 1999.

GeoSystems Analysis, 2000, Technical memorandum: consultant report, 12 p.

GeoSystems Analysis, 2001, Technical memorandum 2: consultant report, 168 p.

Bookman-Edmonston and GeoSystems Analysis, 2001, Technical memorandum 3, baseline monitoring and recharge evaluation: consultant report, 94 p.

Proposed Sewage Work Improvements for Town of Huachuca City, Arizona. Entellus Inc., for USPP and Huachuca City. July 1, 2002.

Programmatic Biological Assessment for Ongoing and Programmed Future Military Operations and Activities at Fort Huachuca, Arizona. Environmental and Natural Resources Division, Directory of Installation Support, U.S. Army Garrison, Fort Huachuca, Arizona. July 2002.

City of Bisbee Wastewater Rehabilitation Project Summary. From project design documents by Russell McConnell, City of Bisbee Public Works Director, for USPP. October 10, 2002.

Proposed Water Management Strategy. City of Sierra Vista, in support of the Fort Huachuca Biological Opinion. October 8, 2002 and February 12, 2003 update.

Preliminary Cost/ Benefit Analysis for Water Conservation, Reclamation and Augmentation Alternatives for the Sierra Vista Subwatershed. Fluid Solutions/ BBC Research & Consulting for the USPP. November 2003.

Project SP- 0011 Storm Water Recharge Feasibility Analysis. GeoSystems Analysis, Inc., for the Upper San Pedro Partnership. February 24, 2004.

Comparison of Methods to Estimate Ephemeral Channel Recharge, Walnut Gulch, San Pedro River Basin, Arizona, in Groundwater Recharge in a Desert Environment: The Southwestern United States. Agricultural Research Service and U.S. Geological Survey. Goodrich , D.C. , D.G. Williams, C.L. Unkrich, J.F. Hogan, R.L. Scott, K.R. Hultine, D.R. Pool, A.L. Coes, and S. Miller. 2004. Edited by J.F. Hogan, F.M. Phillips, and B.R. Scanlon, Water Science and Applications Series, vol. 9, American Geophysical Union, Washington, D.C., 77–99.

Stantec Consulting and GeoSystems Analysis, 2006, Cochise County Flood Control/Urban Runoff Recharge Plan: Stantec Consulting Inc. and GeoSystems Analysis, Inc.

Brown and Caldwell Consultants, 2006, City of Bisbee reuse/recharge options for treated effluent discharged from the San Jose wastewater treatment facility: Brown and Caldwell Consultants, variously paged.

## Partnership planning documents consulted for report preparation

USPP Semi-annual Report - progress through January 2000. USPP Administrative Committee. February 9, 2000.

Upper San Pedro Partnership Progress Report. USPP Administrative Committee. January 2001

Water Conservation Plan- 2002 Progress Report. USPP Administrative Committee. January 2002

# Appendix D –Legal Impediments Reviewed in Recent 321 Reports

Included in this appendix are the text of the 2009 and 2008 (reporting primarily on 2008 and 2007 legislative actions) "Legal Impediments" sections from those 321 Reports. For legal impediments addressed previous to 2007, the reader is directed to the earlier 321 Reports, available from the Upper San Pedro Partnership website (http://www.usppartnership.com/).

## Legal Impediments Reviewed in 2008 321 Report

Consistent with the requirements of Section 321, the initial report included a list of potential legal barriers to the implementation of certain management measures. Section 321(d)(2)(C) further requires that annual reports include a discussion of what progress has been made in addressing these legal impediments.

Note that no additional legal barriers to implementation of management measures occurred in 2008, nor did the Partnership make any additional progress in addressing the previously existing legal impediments outlined below. This is at least in part a result of the Arizona State Legislature's preoccupation this year with the State's fiscal budget, brought on by the economic down-turn at the end of 2008 and early 2009. Little legislation passed the State Legislature this year outside of items directly related to the State's fiscal health.

Water-Management Measures and Legal Impediments have been identified in three major categories:

(1) Conservation Measures,

(2) Recharge/Reuse Measures, and

(3) Augmentation/ Importation Measures.

Within each major category specific issues have been determined to be important to meeting the stated goal of sustainability. Individual member entities have worked on those issues under their jurisdiction during the past five years. Additionally, the Partnership has tracked legislation as it has been introduced in the Arizona Legislature along with any final action or inaction taken.

Following five years of effort many of the identified legal impediments have been resolved either in part or fully. A more detailed review of these was included in the 2007 Report and is included here as Appendix C. This report will concentrate on those issues remaining for resolution. In addition, the Partnership Advisory Committee has added a new legal impediment with this report, found at the end of the section under "Other."

## Conservation Measures – Code Changes

- Although the Arizona Legislature has not expanded local authority in the areas of potential code changes that could modify human behavior in water use, Cochise County and several cities within the Subwatershed have adopted more stringent regulations. It is felt that this issue has been partially resolved.

- Authority to manage local/regional water issues have been partially addressed in the establishment of the Upper San Pedro Water District organizing board. This issue has been partially resolved.

- Legislation passed into law in 2007 provided Cochise County and its municipalities with the ability to deny subdivision plat approval for lack of water adequacy. Cochise County Board of Supervisors unanimously adopted a resolution implementing this law for both the county and all municipalities. It is felt that this issue has been resolved.

## Conservation Measure – Zoning

- The ability of counties to regulate lot splits of five or fewer remains an issue of concern. A bill was introduced during the 2008 legislative session that would have allowed such regulation for purposes of water management; however, the issue continues to generate major opposition and has not moved forward. This impediment is yet to be resolved.

## Conservation Measures – Conservation Pricing

- The ability for the Arizona Corporation Commission to consider area-wide conservation pricing for those water utilities regulated by the ACC remains unresolved.

## Conservation Measure –Technology Incentives

- The Arizona Legislature established a Water Supply Development Revolving Fund that, when funded, will be available to those counties and municipalities that have adopted the water adequacy requirement. This issue awaits funding appropriation by the State Legislature.

## Recharge/Reuse Measures –Effluent Recharge/Reuse

- There continues to be no matching funds from State sources for conservation projects outside of the riparian zone to help address water management issues. Additionally, sufficient funding is not available for communities to meet EPA/ADEQ's high water-quality standards for effluent to be recharged through

shallow basins. The Water Supply Development Revolving Fund, when funded, could help resolve this issue. It remains an item for resolution.

### Recharge/Reuse Measures –Stormwater Recharge

- Recharge facilities in Arizona may be located on State Trust Land, but subject to the State Land Department's mission to manage the State Trust Lands for the best economic interests of the Trust's beneficiaries and subject to state law governing the means of disposing of Trust Land. This may reduce the options available for optimally located recharge facilities. Continued work is being done to identify key locations for recharge, and the Arizona State Land Department continues, within their guidelines, to work with the Partnership as potential sites are identified. This issue remains to be resolved.

### Augmentation/Importation Strategies

- Recharge facilities in Arizona may be located on State Trust Land, but subject to the State Land Department's mission to manage the State Trust Lands for the best economic interests of the Trust's beneficiaries and subject to state law governing the means of disposing of Trust Land. This may reduce the options available for optimally located recharge facilities. Continued work is being done to identify key locations for recharge, and the Arizona State Land Department continues, within their guidelines, to work with the Partnership as potential sites are identified. This issue remains to be resolved.

- The outcome of the Gila River Adjudication, which has been ongoing for over 25 years, may render some projects unfeasible. Arizona's definitions regarding surface water, ground water, and the potential connections between them are subject to the judicial proceedings in the Gila River Adjudication. The Arizona Water Settlements Act, Public Law No. 108-451 (2004) provides Congressional approval for a settlement, but no judicial decree has yet been entered. During the legislative sessions of 2005 and 2006 HB 2728 and HB 2835 were passed and signed by the Governor implementing the required portions of the Settlement Act. However, there continue to be on-going adjudications between parties other than Gila River Tribal Communities. In 2007 the United States Supreme Court denied a request to review the 2005 decision of the Arizona Supreme Court regarding subflow issues. As a result, the Arizona Department of Water Resources is charged with the mapping of the subflow zone for the San Pedro River Watershed and is working with the Arizona Geological Survey in mapping the Holocene alluvium to determine the jurisdictional delineation between surface water and groundwater. This work could have major impacts on groundwater well locations.

### Other

- Lack of authorization for the USPP in PL 108-136 and reliance on earmarks continues to impede progress toward sustainability in the Subwatershed.

## Legal Impediments Reviewed in 2007 321 Report

Consistent with the requirements of Section 321, the initial report included a list of potential legal barriers to the implementation of certain management measures. Section 321(d)(2)(C) further requires that annual reports include a discussion of what progress has been made in addressing these legal impediments. To meet this reporting requirement, the following list restates the legal impediments discussed in the initial Section 321 report and includes the current status of proposals to address these barriers. Recognizing that changes in applicable legal standards have broad-based policy effects that are beyond the scope of this report, this discussion of legal impediments carries no explicit or implicit recommendation or endorsement for any legislative action by any Partnership member or Federal, State, local, or other entity.

Water-Management Measures and Legal Impediments have been identified in three major categories:

(1) Conservation Measures
(2) Recharge/Reuse Measures
(3) Augmentation/ Importation Measures

Within each major category specific issues have been determined to be important to meeting the stated goal of sustainability. Individual member entities have worked on those issues under their jurisdiction during the past four years. Additionally, the Partnership has tracked legislation as it has been introduced in the Arizona Legislature along with any final action or inaction taken.

### Conservation Measures—Code Changes:

**Limited authority exists for local (city, county) action with respect to modifying human behavior subsequent to final building inspection or for actions not related to development (i.e., water wasting ordinances).** Since 2004 Cochise County and the City of Sierra Vista have worked on and/or passed myriad code changes. The Sierra Vista Subwatershed Water Conservation and Management Policy Plan was

adopted in 2006 by Cochise County Board of Supervisors. The Plan limits density increases unless the subdivider incorporates water savings that mitigate any increase in usage over the current zoning. It prohibits increasing densities within two miles of the San Pedro Riparian National Conservation Area and caps densities to one unit per acre unless effluent is recharged or densities are transferred from elsewhere. A companion ordinance was also adopted by the County in late 2006 mandating certain water saving devices. The Joint Planning Committee (comprised of representatives from each local government within the subwatershed) developed a water conservation model ordinance that was approved by the Partnership and subsequently distributed to the governing bodies of the four municipalities for their consideration. The Sierra Vista City Council amended their existing water conservation ordinance in June 2007 to incorporate many of the model ordinance provisions. These include a further limitation of 10 percent on commercial use of turf; requiring the use of Energy Star rated clothes washers and dish washers under certain circumstances; and the prohibition of potable water for golf course irrigation. No legislative action at the state level has occurred that would provide local governments with additional authority in this area of concern with the exception of the repeal of the State Plumbing Code thus authorizing all cities and counties the ability to adopt individual codes.

**Current state law does not provide any effective mechanisms for local/regional water management authority, or local ability to create funding mechanisms outside of Active Management Areas (AMAs) (ARS 45-1942).** Since 2004 there have been multiple committees, both legislative and at the department level (ADWR), established to study and identify a means by which such a mechanism could be developed with broad based support. During 2006–2007 a Statewide Water Advisory Group (SWAG) met numerous times to discuss and develop potential solutions to the issue of rural water concerns throughout the state. During the 2007 legislative session, House Bill 2300 was passed outlining the process for the establishment of the Upper San Pedro Water District. This action is considered to be groundbreaking in that, if approved by the voters of the District, facilities can be constructed that will augment existing water supplies and assist in reaching sustainable yield as required by Section 321. Additionally, House Bill 2692, "Water Supply Development Revolving Fund" was passed and signed by the Governor. This bill provides funding assistance for water supply development projects if the county or municipality adopts the Water Adequacy requirements under Senate Bill 1575.

**Current state law is ambiguous regarding appropriate actions by counties when ADWR determines "water inadequacy." (ADWR's "groundwater adequacy certificate" considers only availability for human use, not ecological considerations). Recent case law appears to prohibit county government from denying subdivision approval for lack of water adequacy.** During the 2007 legislative session Senate Bill 1575, "Water Adequacy Amendments" was passed and signed by the Governor. This bill authorizes a county or municipality to

adopt by unanimous vote an ordinance requiring an adequate water supply before any subdivision may be approved. This action, in conjunction with the establishment of the Upper San Pedro Water District, requires the Director of the Arizona Department of Water Resources to adopt rules for water adequacy that are consistent with the sustainability goal of the District.

## Conservation Measures—Zoning:

**Current law limits counties from applying subdivision standards (with respect to water resource management) to lot splits of five or fewer (ARS 11-806/11-809)**.
There has been no change adopted or contemplated to resolve this issue.

## Conservation Measures—Easements:

The issue identified was that the current law does not provide for the use of Transfer Development Rights (TDR) for counties. This denies counties the use of that management option. In 2005, HB 2364 became law giving counties the authority to adopt a TDR ordinance. Cochise County worked with Pima County to develop such an ordinance. During this process the Partnership has established a TDR Work Group to assist in the development of 'key locations' that will identify the 'giving' properties portion of the transfer equation. The Partnership believes that such transfers are a best served through private arrangements. It is felt that this impediment has been resolved.

**Current state law regarding the establishment of 'irrigation non-expansion areas (INA)' applies to entire basins or subbasins, and cannot be applied to a subwatershed such as the Sierra Vista Subwatershed (ARS 45-432).** An attempt was made to pass legislation in 2006 that would have established an INA only for the SV Subwatershed. It failed to gain the necessary legislative support. With irrigated agriculture on the decline in the SV Subwatershed, this issue has not been pursued.

The impediment of no matching funds from State sources for conservation projects outside of the riparian zone to help address water management issues was partially resolved in 2006 through the establishment of the Agricultural Protection Fund. So far there has been no appropriation for this Fund. In the 2007 Legislative Session, House Bill 2692, "Water Supply Development Revolving Fund" was passed and signed by the Governor. This bill provides for funding assistance for water supply development projects if the county or municipality adopts the Water Adequacy requirements under Senate Bill 1575.

**Current tax policy provides incentives for water consuming uses but not for water conservation uses on undeveloped lands (ARS 42-15004).** There has been no action taken on this measure during the past three years of this report. Passage of House Bill 2300 in 2007 provides an opportunity for the voters within the Upper San Pedro Water District to implement a use tax on customers of municipal water providers that could offer an incentive to conserve.

### Conservation Measures—Conservation Pricing:

**The Arizona Corporation Commission (ACC), Arizona's public utilities commission, is limited in its ability to consider area-wide conservation pricing for the private and individually owned water providers who serve about 90 percent of the area's population (ARS 4-257).** Although guidelines for the drafting of legislation were considered, no bills have been introduced on this subject due to a lack of legislative support.

### Conservation Measures—Technology Incentives:

**Currently, there are no matching funds from State sources for conservation projects outside of the riparian zone to help address water management issues.** House Bill 2692, "Water Supply Development Revolving Fund" was passed and signed by the Governor in 2007. This bill provides for funding assistance for water supply development projects if the county or municipality adopts the Water Adequacy requirements under Senate Bill 1575.

### Recharge/Reuse Measures—Effluent Recharge/Reuse:

**Currently, there are no matching funds from State sources for conservation projects outside of the riparian zone to help address water management issues. Additionally, sufficient funding is not available for communities to meet EPA/ADEQ's high water-quality standards for effluent to be recharged through shallow basins.** House Bill 2692, "Water Supply Development Revolving Fund" was passed and signed by the Governor in 2007. This bill provides for funding assistance for water supply development projects if the county or municipality adopts the Water Adequacy requirements under Senate Bill 1575.

### Recharge/Reuse Measures—Stormwater Recharge:

**Currently Arizona limits the disposition and (or) use options for State trust lands. Such options could permit construction of optimally located recharge facilities.** Although no action has occurred to change this

issue, the Partnership's Technical Committee is working with the existing groundwater modeling program to identify 'key locations' for possible recharge. A representative of the Arizona State Land Department participates in the Partnership and dialogue is on-going.[1]

## Augmentation/Importation Strategies:

**Currently Arizona limits the disposition and (or) use options for State trust lands. Such options could permit construction of optimally located recharge facilities.** Although no action has occurred to change this issue, the Partnership's Technical Committee is working with the existing groundwater modeling program to identify 'key locations' for possible recharge. A representative of the Arizona State Land Department participates in the Partnership and dialogue is on-going.

**Current State law generally prohibits interbasin transfer of groundwater, and intrabasin transfer of ground water between subbasins may be subject to the payment of 'damages.'** In 2006 the Governor signed HB 2436 that allows groundwater to be transported away from a groundwater basin that is outside an active management area (AMA) under specific emergency circumstances and on a temporary basis. House Bill 2300 establishing the Upper San Pedro Water District prohibits this from occurring in the Sierra Vista Subwatershed.

**The outcome of the Gila River Adjudication, which has been ongoing for 25 years, may render some projects unfeasible. Arizona's definitions regarding surface water, groundwater, and the potential connections between them are subject to the judicial proceedings in the Gila River Adjudication. The Arizona Water Settlements Action, Public Law No. 108-451 (2004) provides Congressional approval for a settlement, but no judicial decree has yet been entered.** During the legislative sessions of 2005 and 2006 HB 2728 and HB 2835 were passed and signed by the Governor implementing the required portions of the Settlement Act. However, there continue to be on-going adjudications between parties other than Gila River Tribal Communities.

[1] In correspondence dated September 8, 2008, the Arizona State Land Department (Land Department) indicated that this legal impediment incorrectly depicts Arizona law as it relates to locating recharge facilities on State Trust Land. Recharge facilities may be located on State Trust Land, subject to the Land Department's mission to manage the State Trust Lands for the best economic interests of the Trust's beneficiaries and subject to state law governing the means of disposing of Trust Land. Application of the Land Department's obligations to specific facilities at specific locations will require the Land Department to conduct a site-specific evaluation. The Land Department will give due consideration to any proposal presented by the Partnership and will work with the Partnership in an attempt to resolve any obstacles to the mutual satisfaction of each entity.

In 2007 the United States Supreme Court denied a request to review the 2005 decision of the Arizona Supreme Court regarding subflow issues. As a result, the Arizona Department of Water Resources is charged with the mapping of the subflow zone for the San Pedro River Watershed and is working with The U.S. Geological Survey in mapping the Holocene alluvium to determine the delineation between surface water and ground water. This work could have major impacts on groundwater well locations.

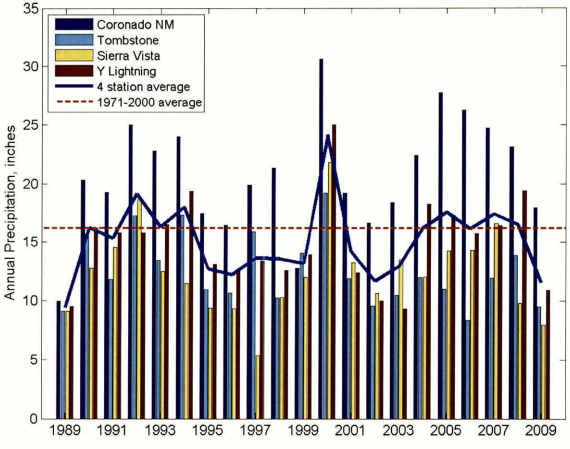
## Additional Actions Taken:

Since 2005 several bills have been passed that provide some benefit to the subwatershed:

(1) a requirement that all public water systems prepare supply, drought-preparedness and conservation plans
(2) tax credits for individuals and builders installing water conservation systems

# Appendix E – Precipitation in the Sierra Vista Subwatershed

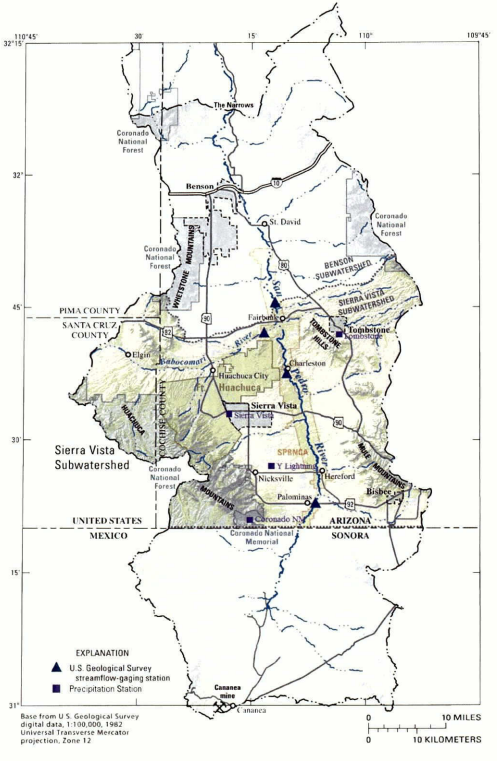
**Figure E1.** Four-station precipitation average, thirty-year mean, and individual precipitation station values for the Sierra Vista subwatershed of the Upper San Pedro Basin, 1989–2009.






FMC000775

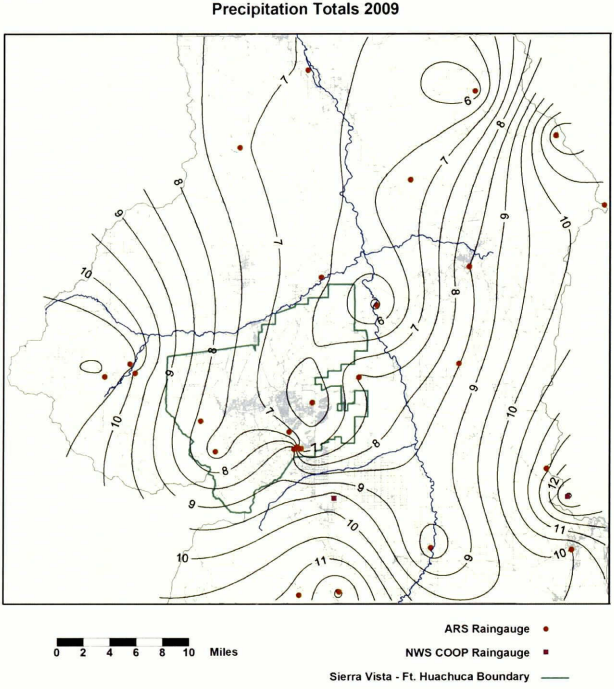
**Figure E2.** Location map for four precipitation stations referenced in fig. E1






FMC000776

**Figure E3.** The average precipitation calculated for the Subwatershed in 2009, based on the Agricultural Research Services rain gage network (ARS Raingauge), was 8.49 inches (see 2009 321 Report for previous years' averages). Based on the 4-station average shown in figure E1, the average precipitation for the Subwatershed in 2009 was higher, 11.6 inches. This is because of the greater weighting given to the near-mountain Coronado National Memorial precipitation station in the 4-station average.






FMC000777

# Appendix F – Agency Representation in the Upper San Pedro Partnership

## Local Agencies

Cochise County
Sierra Vista
Huachuca City
Bisbee
Tombstone

## Arizona State Agencies

State Land Department
Department of Water Resources
Department of Environmental Quality
Arizona Natural Resource Conservation Districts State Association

## Federal Agencies

U.S. Geological Survey
USDA Agricultural Research Service
U.S. Fish and Wildlife Service
Bureau of Reclamation
Fort Huachuca
Bureau of Land Management
U.S. Forest Service
National Park Service

## Non-Governmental Agencies

The Nature Conservancy
Audubon Arizona
ABCDW LLC
Hereford Natural Resources Conservation District



FMC000778

# Appendix G – Statistical trend test results

| Plot name | Figure number | $R^2$ | p |
|---|---|---|---|
| **Regional Aquifer Water Levels** | | | |
| **short term** | **A3a** | | |
| Southwest (without Ranch wells) | | 0.016 | 0.76 |
| Southwest (Ranch wells only) | | 0.98 | 0.008 |
| Fort Huachuca | | 0.98 | <<0.001 |
| East (without Moncreif #1) | | 0.066 | 0.54 |
| East (with Moncreif #1) | | 0.34 | 0.22 |
| EOP (MW1, MW5, MW7) | | 0.36 | 0.12 |
| EOP (Bella Vista, LS-6) | | 0.61 | 0.022 |
| EOP (all wells) | | 0.62 | 0.020 |
| **long term** | **A3b** | | |
| Southwest (Antelope #3) | | 0.11 | 0.17 |
| Southwest (Rambo) | | 0.043 | 0.22 |
| Fort Huachuca | | 0.99 | <<0.001 |
| East | | 0.0018 | 0.91 |
| EOP (MW1, MW5, MW7) | | 0.84 | <<0.001 |
| EOP (Bella Vista) | | 0.78 | <0.001 |
| EOP (LS-6) | | 0.63 | <0.001 |
| EOP (all wells) | | 0.84 | <<0.001 |
| **Alluvial Aquifer Water Levels** | **A5** | | |
| Palominas (2001-08) | | 0.67 | 0.024 |
| Hereford (HER wells only, 2000-08) | | 0.53 | 0.026 |
| Hereford (HER and KOL wells, 2001-03; 2006-08) | | 0.00 | 0.98 |
| Hunter (2001-08) | | 0.52 | 0.069 |
| Central (BLM only, 1995-2009) | | 0.26 | 0.055 |
| Central (all wells, 2002-08) | | 0.92 | <0.001 |
| North (BOQ-UP, BOQ-LO, FBK-LI, TOM-L, 2002-09) | | 0.55 | 0.091 |
| North (FBK-LO, FBK-LI, TOM-L, 2001-08) | | 0.0064 | 0.86 |
| **Near Stream Vertical Gradients** | **A6** | | |
| Palominas | | 0.073 | 0.5175 |
| Hereford | | 0.68 | 0.006 |
| Central | | 0.38 | 0.076 |
| North | | 0.56 | 0.054 |

| Plot name | Figure number | $R^2$ | p |
|---|---|---|---|
| **Stream Flow** | | | |
| **short term** | **A7a** | | |
| Charleston, winter low flow | | 0.096 | 0.45 |
| Charleston, summer low flow | | 0.016 | 0.77 |
| Palominas, days of no flow | | 0.23 | 0.23 |
| Tombstone, days of no flow | | 0.077 | 0.50 |
| **long term** | **A7b** | | |
| Charleston, winter low flow | | 0.00049 | 0.85 |
| Charleston, winter low flow, years with >20 cfs lowflow removed | | 0.13 | 0.004 |
| Charleston, summer low flow | | 0.38 | <<0.001 |
| Palominas, days of no flow | | 0.15 | 0.0045 |
| Tombstone, days of no flow | | 0.44 | <<0.001 |
| **Springs** | **A9** | | |
| South | | 0.037 | 0.75 |
| East | | 0.15 | 0.52 |
| West-Horsethief | | 0.85 | 0.025 |
| West-Murray | | 0.97 | <<0.001 |
| West-Moson | | 0.17 | 0.73 |

| Explanation: p-value | |
|---|---|
| ≤0.050 | statistically significant increasing trend |
| ≤0.050 | statistically significant decreasing trend |

The **coefficient of determination,** or $R^2$, represents the proportion of variability in a data set that is accounted for by the statistical model. It provides a measure of how well future outcomes are likely to be predicted by the model, and ranges from 0 (not predicted) to 1 (well predicted).

A **p** value is the probability of obtaining by chance a result at least as extreme as the one that was actually observed. For example, where p = 0.05, there is a 5% chance that the observed trend occurred by chance rather than due to a cause or causes.



FMC000780