ANNUAL REPORT

Fiscal Year 2015

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Executive Summary

The Arizona Legislature established the Arizona Water Protection Fund (AWPF) in 1994 (A.R.S. 45-2101 et seq.) In passing the legislation the Legislature declared that the policy of the state is to provide for a coordinated effort between state funding and locally led solutions for the restoration and conservation of the water resources of the state. The purpose of the AWPF is to provide monies through a competitive public grant process for implementation of measures to protect water of sufficient quality and quantity to maintain, enhance, and restore rivers and streams and associated riparian resources consistent with existing water law and water rights.

The Arizona Water Protection Fund Commission (Commission), which oversees the AWPF, is comprised of 9 appointed citizen based voting members, 2 non-voting state agency ex-officio members, and 2 non-voting advisory members from the State Legislature. Commissioners represent a variety of land, water use and riparian perspectives.

The AWPF was intended to be a proactive response to possible federal intervention in Arizona's river and riparian resource issues. The program was partially created to promote the use of incentives emphasizing local implementation rather than regulation to address resource concerns. As such, the Commission's philosophy has been to utilize a grass roots approach to improving river and riparian resources statewide. The program is operated through a competitive grant process that asks the public to propose local solutions rather than having the State dictate specific measures, priorities or areas of concern.

Arizona's water resources and associated riparian areas are important resources to the people of Arizona for a multiple of uses to include agriculture, recreation, wildlife habitat, residential and industrial uses. Proper land and watershed management strategies can make a profound difference in water quality and quantity, as well as, the economic and environmental values of our rivers and riparian ecosystems.

From 1994 to 2014, the Commission has invested in 190 projects and contributed over $37 million toward the restoration, protection and enhancement of river and riparian resources in Arizona. As a result, Arizona citizens have realized many benefits from these investments through improvements in water quality, in-stream flows/water supplies, biodiversity, fish and wildlife habitat, recreation, flood control and overall watershed functionality and sustainability. In addition, important socioeconomic benefits such as jobs and revenue streams are realized by many local communities through the implementation of AWPF projects.

In FY 2015 the grant application and manual was reviewed and the guidelines were updated as required in statute. The Commission is interested in drawing more applicants with proposals having a broader impact on the restoration and conservation of water resources in the state through watershed/landscape level projects.

The Commission is currently reviewing the applications received for FY 2015. A decision as to which applicants will be awarded funding will take place in August of 2015.

Arizona Water Protection Fund Creation and Purpose

The 1994 Arizona Legislature established the Arizona Water Protection Fund (AWPF) and the Arizona Water Protection Fund Commission (Commission) to administer the AWPF (A.R.S. § 45-2101 et seq.). In passing the enabling legislation, the Legislature declared that their policy was to provide for a coordinated effort for the restoration and conservation of the water resources of the state. The policy was designed to allow the people of Arizona to prosper while providing financial resources for the conservation and restoration of this State's rivers, streams and associated riparian habitats, including dependent fish and wildlife resources. The law mandates that financial resources be available through grants to appropriate public and private entities to assist in water resource management activities that are consistent with that policy (A.R.S. § 45-2101 (A)).

The primary purpose of the AWPF by statute is to provide an annual source of funds for the development and implementation of measures to protect water of sufficient quality and quantity to maintain, enhance and restore rivers, streams and associated riparian resources, including fish and wildlife resources that are dependent on these important habitats, consistent with existing water law and water rights. The Commission may also provide funding to develop and protect riparian habitats in conjunction with a man-made water resource project, if the man-made water resource project directly or indirectly benefits a river or stream and includes or creates a riparian habitat.

Program Organization

Arizona Water Protection Fund Commission

The Commission is the main policy making body for the AWPF. The Commission is comprised of 9 voting members who must be Arizona residents and are appointed by various officials who, by statute, represent a variety of land, water use and socioeconomic perspectives. In addition, several of the appointed positions require technical expertise in water, natural resources and riparian ecology. There are also two non-voting ex officio members – the Director of the Arizona Department of Water Resources and the Commissioner of the Arizona State Land Department and two non-voting advisory members from the Arizona State House of Representatives (1) and Arizona State Senate (1). A list of current Commissioners and vacancies is provided in Table 1. Legislation was introduced during FY 2013 to change the number of Commission members from 15 to 9 as well as a change to the representative categories.

Arizona Water Protection Fund Administration

The Arizona Department of Water Resources (ADWR) provides the primary technical, legal and administrative staff to the Commission. The AWPF is managed by its Executive Director under the direction of the Commission. Staffing for the program

during FY 2015 included an Executive Director, one legal counsel, and one finance administrator.

Commission Member Name	Statutory Category Represented – Affiliation	Appointing Authority
Paradzick, Charles *	(1)Agricultural Improvement District -SRP	Governor
Jacobs, Pat **	(1) Multi-County Water Conservation District – Central Arizona Project (CAP)	District Governing Board (CAWCD)
Brick, Harold Paul	(4) Natural Resource Conservation Districts – San Pedro Natural Resource Conservation District	Speaker of the House of Rep.
Macauley, Michael	(4) Natural Resource Conservation Districts – Coconino Natural Resource Conservation District	Senate President
Pierpoint, Roy	(4) Natural Resource Conservation Districts – Gila Bend, Natural Resource Conservation District	Senate President
Schock, William	(1) Representative, AZ Natural Resource Conservation Districts State Association	Governor
VACANT	(4) Natural Resource Conservation Districts –	Speaker of the House of Rep.
VACANT	(1) Indian Tribe	Intertribal Council of Arizona
Holmes, Mark	(1) Member of the Public – B.S. Hydrology- City Service by CAP	Governor
Buschatzke, Tom	Non-Voting Ex Officio Member	Director, Department of Water Resources
Atkins, Lisa	Non-Voting Ex Officio Member	State Land Commissioner
Griffin, Gail	Non-voting advisory member (1)AZ State Senate	Senate President
Brophy-McGee, Kate	Non-voting advisory member (1)AZ House of Representatives	Speaker of the House of Rep.
*Commission Chair **Commission Vice-Chair		

Accomplishments FY 2015

The acceptance of grant applications for FY 2015 closed in May of 2015. These applications have been posted on the website for public review, have been distributed to the Commissioners for review, and are currently under review by ADWR staff, outside agencies, natural resource professionals and applicable NRCD's.

In 2015, Arizona Water Protection Fund staff managed 16 active grant projects and provided technical assistance to grantees. Of these projects, four contracts were closed out after project completion (see project descriptions below). To date, the Commission has invested in 190 projects and contributed over $37 million toward the restoration, protection and enhancement of river and riparian resources in Arizona. A wide range of projects have been funded including but not limited to channel restoration, riparian revegetation, wetland creation/restoration, fencing and other grazing management improvements, upland restoration, erosion control, conservation education and applied ecological research. Arizona citizens have realized many benefits from these investments through improvements in water quality, in-stream flows/water supplies, biodiversity, fish and wildlife habitat, recreation, flood control and overall watershed health. Not only do communities rely on these watersheds and riparian areas for a general water source, but also for recreation, eco-tourism**,** fishing/hunting**,** birdwatching, and agricultural operations. Important socioeconomic benefits such as employment opportunities and increased revenue streams are realized by many local communities through the implementation of AWPF projects. Several of the projects completed and ongoing include the control of invasive species such as Tamarisk which is a fire hazard, effects soil nutrients, and consumes large amounts of water. A complete list of projects and a location map are included in Appendix A.

FY 2015 Grant Cycle

There were 8 grant applications received for FY 2015 for a total of $1,284,137.42 in funding requests. Of these, one application was eliminated during the screening process because it did not contain all of the required information. Of the remaining 7 applicants, all were categorized as capital improvements.

FY 2015 Active Grant Projects

07-141WPF: Picture Canyon Rio de Flag Meander Restoration Project

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
150	City of Flagstaff	Coconino	$582,279.00	June 30, 2016

Project Description: Phase I of this project has restored the fluvial processes of the Rio de Flag and enhanced the riparian corridor for habitat, recreation, and aesthetics in the Picture Canyon area. Specific objectives included restoring channel meander and floodplain function, eliminating noxious weeds, restoring native riparian and wetland plant communities, increasing plant species diversity, creating additional wetland habitats, improving water quality, increasing wildlife habitat, and providing recreational benefits. Phase II of this project will complete similar work in the upstream reach.

07-142WPF: Reduction of Erosion and Sedimentation along the Lower San Pedro River through Hydrologic Restoration of Modified Ephemeral Washes

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
151	The Nature Conservancy	Pinal	$396,409.00	Completed

Project Description: The project involved decommissioning of a ditch and berm, re-contouring the transition between the uplands and the terrace, reconstructing two historic washes, and revegetation of native plant communities to stabilize all construction areas. Project implementation consisted of design plan development, channel excavation and filling, agricultural field/upland/terrace re-contouring, native vegetative seeding and irrigation, invasive/exotic species maintenance, and monitoring.

Completion Summary & Lessons Learned: Due to drought conditions that persisted throughout the monitoring period, vegetation did not become established and resilient enough to forgo the need for supplemental irrigation. Some seeded species did better than others, notably mesquite, globemallow, sand dropseed, and saltbush. Indian wheat and creosote bush became established in numerous patches throughout the restoration area. However, overall plant cover did not meet expectations. Due to mechanical issues, supplemental irrigation was sporadic through 2013, after which a flood event damaged the supply pipeline from the well and no supplemental irrigation occurred.

Grasses did not become established in the floodplain to the extent planned, largely due to drought conditions exacerbated by mechanical issues with supplemental irrigation equipment/ infrastructure. However, vegetation became established in patches, and restoration has resulted in a greater diversity of plant species on the site. Based on

monitoring results, the reconstructed channels appear to be stable and functioning as intended, with flows remaining confined to the reconstructed channels and natural hydrology restored. One location of primary concern, the culvert under SR 77, appears to be stable and functioning properly.

Based on monitoring results, restoration appears to have successfully reduced erosion across the site. Aerial flight and field data show that some erosion and sedimentation have occurred, but erosion and sedimentation have been reduced overall, and no sheet flow events were observed during the monitoring period.

Indian wheat did not successfully outcompete Russian thistle over the restoration site as a whole, primarily due to lack of establishment of this seeded species related to drought conditions and problems with the supplemental irrigation system. However, Indian wheat 15 became established in localized patches throughout the restoration site, and, in these patches, Russian thistle was absent or reduced in abundance. Due to lack of more widespread establishment of Indian wheat, the monitoring data are insufficient to assess whether this species can successfully outcompete Russian thistle on restoration sites. Additional monitoring may provide more conclusive data on long-term establishment of Indian wheat and its potential role in limiting the establishment or abundance of Russian thistle.

There are elements of success associated with this restoration model and elements that warrant some changes in approach with regard to implementation. From an engineering standpoint, the project was successful because it restored natural hydrology to the site and reduced erosion and sedimentation. At the end of the monitoring period, there was no indication of any design failure in this regard.

From the standpoint of vegetation establishment, success was limited due to drought conditions and problems with the supplemental irrigation system. Furthermore, the irrigation design used was not extensive enough to adequately cover the site, and the equipment was not sufficiently reliable to provide supplemental irrigation when needed. Future restoration projects should implement irrigation systems with these limitations in mind.

The seed mix developed for the site appears to have been effective, with most seeded species becoming established to some extent. For future restoration projects, it is recommended that less mesquite be included in the seed mix because this species is pervasive throughout the area. It is further recommended that soil alkalinity be considered and that more alkaline tolerant species (e.g., saltbush, creosote bush, alkali sacaton) be included in the seed mix (or be more prominent in the seed mix). This should improve vegetation establishment in restoration sites with alkaline, gypsiferous soils.

Overall, the project was successful in achieving the stated objectives. Restoration of the natural washes has prevented large-scale failure and further erosion of the berm and ditch system, has reduced erosion and sedimentation in the project area, and has restored the natural hydrology and geomorphology of the North and South Wash. Restoration of these

two washes has resulted in the creation of approximately 10 acres of riparian habitat within the low flow channel and overbank areas of these drainages, where flows were previously cut off by the irrigation ditch and berm system. Though vegetation establishment was limited at the end of the monitoring period, restoration of natural hydrology is expected to result in reestablishment of riparian vegetation over time along these washes.

A final recommendation is to continue monitoring the restoration site, but on a less frequent (e.g., annual) basis. This would allow a better assessment of restoration success over the longer term, especially under more normal rainfall conditions.

08-155WPF: Restoration of the Gila River at Apache Grove

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
164	Larry Barney	Greenlee	$771,048.00	Completed

Project Description: This project restored natural floodplain function by removing an existing partially breached levee, reducing the risks of lateral erosion and land loss, managing salt cedar, and improving riparian habitats and stream function along 1.6-miles

of the Gila River in the Apache Grove area near Duncan. Proper stream geomorphology/channel characteristics were restored by allowing the main channel to reattach to its former floodplain thereby restoring floodplain conditions within the project area. The project also included mechanically excavating 3,000 feet of earthen levee and returning the ground to natural grade to restore natural flooding to the floodplain. A series of overbank hedgerows were designed and constructed in agricultural fields to allow for efficient harvesting of crops. Other project components included implementation of bank stabilization measures, invasive vegetative species management, native species revegetation, monitoring, fencing, livestock management, and public outreach.

Waiting on Final Report.

08-157 WPF: Paria River Exotic Removal Project: Phase I

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
166	Grand Canyon Trust	Coconino	$293,960.10	Completed

Project Description: This project is reducing non-native shrubs and trees along an 11-mile reach of the Paria River to enhance native plant/animal communities. The project is

restoring and preserving natural conditions by decreasing the negative impacts of non-native shrubs and trees such as tamarisk and Russian olive; as well as enhancing wildlife habitat by protecting and restoring native riparian vegetation through natural recruitment following treatment. Through volunteer removal efforts and outreach activities, the public is being educated about the importance of native vegetation to Arizona's stream systems.

Completion Summary & Lessons Learned: From March through May 2008, a site assessment and baseline monitoring transects were established over three one-week backpacking trips. Vegetation, soils, and active channel width measurements were collected at 32 transects in 2008 and 19 transects in 2013 and 2014. Ultimately, nine reference transects, seven treatment transects (tamarisk and/or Russian olive present) and three "beetle" transects (tamarisk and/or Russian olive present but not treated) were sampled post-treatment. Although the transects were originally further stratified according to whether the transect was located on a riparian terrace vs. the floodplain, we pooled these together for this analysis, since most (15) of the transects 1 The original grant proposal stated that Phase I of the project included "17 miles from the Arizona state line to 4 that were sampled were on the terraces and there are too few floodplain transects to consider them separately in the statistical analysis. In addition to the transect data, photopoints were installed in March 2008 and were retaken on a semiannual to annual basis throughout the project period.

In total, GCT crews removed 28,030 tamarisk trees including 7532 seedlings, 16,049 saplings, and 4449 mature trees over the 5-year exotic removal phase of the project. Crews also removed 1601 Russian olive trees including 496 seedlings, 731 saplings and 374 mature trees. Crews removed 12,085 square meters of tamarisk canopy cover and 2430 square meters of Russian olive canopy cover for a total of 3.66 acres of exotic canopy. Crews removed 5877 exotic trees from the flood zone and 23,666 exotic trees from the terraces, for a total of 92.47 riparian acres. The vast majority of trees – over 91 percent – were treated via the cut stump method.

Overall, tamarisk was completely removed from 6 miles of the Paria River project area and intermittently from transects along an additional 3.5 miles of project area, and Russian olive has been removed from over 10.5 miles of the project area. Site monitoring and maintenance will continue on an as needed basis.

This site was extremely isolated and potentially hazardous. The weight and bulk of tools, herbicides, food, human waste, and other gear made logistics difficult. Risk management is very important to consider for a project such as this and should be carefully considered when undertaking restoration work in any remote environment. Thorough plans and protocols for communication and emergency response must be in place.

We learned midway through the project that the Environmental Assessment approved herbicide, Triclopyr-based, is not as effective as Imazapyr-based products. Imazapyr is lighter in overall weight because it can be used in smaller concentration than Triclopyr. It is less toxic and does not pose the threat of irreversible eye damage that certain

Triclopyr-based herbicides do. Imazapyr is widely reported to be more effective at treating exotics, although we did not test that in the field. This data suggests that Triclopyr was effective with follow-up treatments. Herbicide applicator trainings for backcountry hand application projects could be improved to provide backcountry-specific information and hands-on training. This would make them more appropriate and cost-effective.

We observed substantial regrowth following initial treatments in many of the treatment areas but regrowth was considerably less following retreatment. Initial treatments in the flood zone were less effective than on benches and terraces. This could have been due to a number of factors, including possible differences in effectiveness between Garlon 3a and Garlon 4 Ultra, greater dynamism and resilience within the flood zone, or simply the tiny size of seedlings commonly found in the flood zone and the resulting difficulty in fully eradicating them. Similarly, it was often difficult to distinguish initial vs. retreatment of seedlings and saplings in the floodplain. Despite this, we did not see substantial differences between the two zones following retreatment. Thus, our data suggest that at least one, and more ideally two follow up treatments are necessary for treatment success, especially in the flood zones.

In a backcountry setting, it is very important to have an appropriate ratio of herbicide sprayers to tree cutters. This helps assure that every cut stem and stump gets sprayed, and in a timely manner. We found that a 4:1 cutter-to-sprayer ratio was the largest manageable size. Smaller ratios can be even better, helping assure more accurate data collection if the rush to spray all cuts is reduced. It is also important to strike a balance between the amount of time spent digging out stumps buried in soil, litter and debris before cutting and spraying them and simply cutting them and moving on. Too much time spent digging rather than cutting and spraying can be counterproductive.

It can be very difficult, if not impossible, to tell an individual tamarisk from one that is partially buried with numerous branches above the soil surface. Protocols for making these judgments are difficult to develop and agree upon, but should be sought. It was therefore helpful and ultimately very valuable to quantify removal by both stems and canopy cover. Overall, we felt that cover estimates were more accurate and consistent than individual trees, again related to time-intensiveness and "what constitutes a single 47 plant" issues. These canopy cover estimates were also more accurate for quantifying regrowth percentages.

We were not certain burning piles of slash from exotic removal had significant benefits because it also presented significant challenges. It takes greater care and effort to build piles and there was simply not enough room to burn them. There existed potential to burn unwanted areas, damage native vegetation, encourage recruitment of other exotic species (including red brome, cheatgrass, and Russian thistle), or leave unsightly scars. If done in a timely manner, burning in the floodplain was best since the scars wash away and the risk of encouraging the growth of subsequent exotic species was diminished.

Due to the nature of the canyon, we were not able to establish physical benchmarks for our measures of active channel width and this proved problematic in terms of being able to accurately re-measure these features following treatments. Our baseline assessment data analysis highlighted substantial differences in the vegetation communities between flood zones and riparian terraces. Our post-treatment vegetation monitoring data suggest that changes beyond removal of exotics have been small and incremental and it will likely be many years before we can truly assess project success. In retrospect, we would have liked to have built in a longer time interval to conduct post-treatment monitoring into the original proposal and scope of work to ensure that funding was secure to conduct measurements on a time scale in which we can more definitively characterize project success.

We learned several lessons establishing and retaking long-term photopoints for this project. More thought should be placed into the contract for the timing of base-line photo monitoring and the growth stage of the trees. Secondly, establishing long-term photopoints with college students was not a great decision. There are several segment photopoints that do not show a significant stand of tamarisk or Russian olive, due to the fact that the volunteers were new to this kind of task that requires careful thought. Another challenge was organizing and storing six years of repeat photography. The format in which we have them organized is not very easy to interpret.

It is important to note that in remote backcountry settings, it is possible – even likely – that exotic removal projects will be more expensive and less productive than originally envisioned. Beyond actual exotic removal work, one of the biggest lessons we learned was that wilderness exotic removal projects are very logistically and risk intensive.

08-160WPF: Atturbury Wash Riparian Stewardship Project

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
169	Tucson Audubon Society	Pima	$390,839.00	March 31, 2016

Project Description: This project is implementing riparian restoration on an undeveloped .45-mile reach of the Atturbury Wash at Abraham Lincoln Regional Park in the City of Tucson. Atturbury Wash is an ephemeral waterway that flows in a northeasterly direction into Pantano Wash. Native revegetation, rainwater harvesting, and installation of check dams are the central elements of the restoration plans.

09-162: Middle Fossil Creek Riparian Habitat Protection and Restoration

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
171	U.S Forest Service	Yavapai & Gila	$250,348.00	June 30,2015

Project Description: This project has restored riparian habitat, reduced sediment, improved water quality and protected cultural resources in Middle Fossil Creek through permanent removal of high-use dispersed campsites; ripping and reseeding of access roads located within the riparian zone; and the development of a communication plan to educate visitors about the importance of riparian resources. The project includes on-going monitoring of riparian vegetation, water quality and visitor use.

Waiting on Final Report.

09-165WPF: Alpine Ranger District Riparian Improvement

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
174	National Wild Turkey Federation	Apache	$372,579.00	September 30, 2015

Project Description: This project is now being implemented and is intended to improve water quality, riparian vegetation, wild turkey nesting and brood habitat, and threatened, endangered and sensitive species habitats on eight riparian sites on the Apache-Sitgreaves National Forests. This project includes forest thinning, constructing fence exclosures, spring box restoration, and creek crossing modifications working in coordination with the U.S.D.A. Forest Service's Alpine Ranger District.

11-173WPF: Invasive Weed Control – Gila River Corridor, Greenlee County

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
180	Coronado Resource Conservation and Development Area	Greenlee	$261,995.96	Completed

Project Description: The Gila River channel, riparian area and flood plain through Greenlee County have been invaded by Russian knapweed, Hoary cress, Yellow starthistle, Malta starthistle and Bull thistle. Once established, these invasive weeds can create monocultures that significantly alter ecosystems, which degrade wildlife habitat and agricultural lands. Funding for this project is being used to implement a highly aggressive integrated weed management program that will restore and protect thirty miles of the Gila River and its associated riparian habitat in Greenlee County.

The project is implementing outreach activities to landowners and the general public with the goal of establishing Early Detection – Rapid Response teams that will be key to long-term control through identification, tracking and trending of invasive weeds. This will allow the community to proactively respond and eradicate any further outbreaks. The project compliments efforts by the Southwest New Mexico Weed Management Area, which is implementing a similar effort on their side of the state line.

Completion Summary & Lessons Learned

Noxious weed management in Greenlee County requires consistent and constant vigilance to maintain energy and attention for an effective program. The program transcends more than just the riverine corridor at this point. Management of uplands, whether farmlands or rangelands, is influencing long-term conditions within the riparian corridor. Consistency in integrating more than a herbicide application program with a more holistic approach is needed where various control practices are supported by expertise and grant funding concurrently. A part time position is warranted for the basic tasks of noxious weed inventory, mapping, and treatment covered in the Gila River Corridor Noxious Weed Control program, not considering effective outreach and communication along with long-term planning and execution of an integrated program.

While the University of Arizona Cooperative Extension and Coronado RC&D do a quality job in promoting basic education and information sharing about noxious weed identification and management, there is a need to maintain a continual one-on-one relationship between an on-ground person and an integrated program.

Leadership at a local or county level is needed with regards to involvement of community (Town of Duncan, Clifton, Morenci) and agency (County, State, BLM and Forest Service) to ensure that integrated management is effective.

Access for inventory and mapping requires a significant amount of time, and should be accomplished well in advance of the primary field season if possible.

Several cooperators are involved in the eradication or control program for targeted noxious weeds using a variety of practices. While some cooperators have aggressively embraced the program, there exist large blocks of lands owned by separate individuals 51 that have little ongoing effort to manage noxious weeds. Most if not all of these parcels are infested with noxious weed species of concern. Many of these parcels are within the Gila River floodplain riparian corridor. The level of involvement with cooperators and local/county/state governments warrants a part time Greenlee County Noxious Weed position, similar to that funded in Grant County, who is a certified herbicide applicator and will operate separately from primary grant funded inventory/mapping programs. The magnitude and potential of the noxious weed infestation expansion, especially Whitetop, was accomplished for Greenlee County Supervisors in November, 2014. This information and education effort should occur for Graham county, as well as key organizations like Gila Valley Irrigation District, Franklin Irrigation District, and Freeport McMoran Inc.

Given the occupancy of hundreds of acres within a protected riparian corridor, and location and aggressive expansion of Whitetop infestations (under riparian overstory canopy), neither hand nor aerial spraying is environmentally or economically feasible at this time for much of the infested acreages. New populations can be aggressively controlled with direct applications but existing infestations will be difficult if not impossible to control. Containment appears to be the most effective option. Integrated pest management options should be explored for the entire Duncan/Franklin/Sheldon/Apache Grove corridors, including prescribed and closely managed grazing programs to reduce the spread and vigor of Whitetop, and to a lesser extend Russian knapweed. A paradigm shift for the stabilization and re-vegetation of fallow or abandoned farmlands within the Duncan valley corridor should be considered and developed where abandoned farms are replanted into native grasslands, and included into productive but proactive grazing programs to reduce weed infestations including noxious weeds. Other program support for integrated pest management and noxious weed control should be pursued through various opportunities to assist cooperators who want to pursue integrated pest management options (grazing, mowing, and wildlife enhancement projects) for the control of targeted noxious weeds. Expand non-riparian related funding sources for a holistic approach for weed management. Example: Town of Duncan and Duncan Schools (County level) need to aggressively address the 6 acre parcel infected with Russian knapweed in the center of the town. There are substantial opportunities to involve the FFA and local community in integrated management of this noxious weed species, while demonstrating sound, sustainable agricultural practices that can apply to many adjacent farm and fallow lands in the valley. Containment of Whitetop and Russian knapweed will require establishment of a clearly defined line for aggressive control of noxious weeds expanding or potentially leaving Greenlee County. Inventory early in 2014 revealed that neither Whitetop nor Russian knapweed had moved into the York Valley area, though getting close at Apache Grove. Although natural barriers to movement may exist in the closed or box canyon area just north of Apache Grove, before entering York, it is likely that small populations may have been established following bank-full flooding in fall, 2014. It is recommended that the area in York and north should be designated as a “weed free” zone and receive focused inventory and control activities.

Collecting data related to riparian corridor conditions using the developed methods for the Gila River Noxious Weed Control project was time consuming both in field work and data assimilation. A revised methodology is needed to address the specific concern about issues related directly to establishment, occupancy, and more importantly options for noxious weed control and/or management with the flood plain riparian corridor. At face value, the actual occupancy of riparian wetlands by Whitetop, for example, does not seem to be affecting the ability or functionality of the riparian ecosystem. The potential for completion with other riparian obligate herbaceous species is of primary concern, but the occupancy of other non-listed weed species like Kochia or Tumbleweed are a significant concern related to increasing the risk of wildfire.

11-174WPF: Eagle Creek Riparian Restoration at Filleman Crossing

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
181	Eagle Creek Riparian Restoration at Filleman Crossing	Greenlee	$265,776.00	Cancelled

Project Description: This project will reduce downstream sedimentation and turbidity; and protect and enhance habitat for federally listed species by armoring a flood-prone road crossing located on the grantee's private property along US Forest Service Road 217. Greenlee County has agreed, through an easement with the grantee, to maintain the crossing. In recent years the US Forest Service relocated most of the in-stream portion of the road crossing. The crossing is now much shorter, perpendicular to both banks, and typical of most stream crossings. Rock rip-rap, aggregate, geo-textile fabric, and gravel surfacing will be installed and compacted across the stream channel. In addition to containing native species, Eagle Creek at the project site is designated critical habitat for the Gila chub and the loach minnow.

11-176WPF: Double Circle Ranch Erosion Control Project, Phase II

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
183	Wilma Jenkins	Greenlee	$36,866.60	Completed

Project Description: The Double Circle Ranch is a 37,000-acre ranch located in the Apache-Sitgreaves National Forest. The ranch unit has an eight mile boundary within Eagle Creek. Portions of Eagle Creek have been designated as critical habitat for the Loach minnow and Spikedace, two federally protected native fish. The Grantee has implemented many successful projects on their ranch, including two from the AWPF (one erosion control project - 09-163WPF and one fencing project – 06-135WPF).

This project is a continuation of work that was implemented with AWPF funding under Grant Number 09-163WPF, and included restoration of certain drainages that feed into Eagle Creek. Like the previous grant, three hands-on workshops (over two and a half days) are being conducted to utilize and educate volunteers on erosion control and restoration practices. By constructing small rock dams, media lunas, splash aprons, and armoring in eroding gullies to catch silt and soil, this project will reduce channel sediment loading, increase vegetation, and improve channel characteristics of the upland drainages.

Completion Summary & Lessons Learned

The consistent monitoring methods we used have shown improvement through our measurements and actual photo points at the worksites emphasize these improvements.

As a result of the enthusiastic participation by our volunteers during 3 workshops, our 4 years of monitoring records have shown a reduction in sediment flow towards Eagle Creek thereby benefiting aquatic habitat, increasing water infiltration with subsequent benefits to the water table, and an increase of productive soil which has improved forage for both livestock and wildlife.

Monitoring methods were developed during the previously funded workshops to be easily repeated and consistently performed each year. All sites had permanent photo point locations and permanent measuring stick sites to show the actual changes in depth and width of each monitored site to prove sediment deposition. The final year recordings were a definite improvement across the entire 3 workshop sites, mainly due to an increase in rainfall resulting in increased sediment deposition and vegetation growth.

Monitoring methods and procedures were sufficient to record the improvements resulting from our erosion control efforts. Now that we have completed 7 total workshops and constructed over 130 structures, if we were to complete any additional future workshops we would change 3 areas of our monitoring protocol. First we would use much more photography and photo points and less actual measurements to show the improvements. A series of photo points along the entire workshop site would provide "visual" proof of improvements, which people respond to much more positively. Second, monitoring using these photo points would be performed twice a year, after the spring and fall growing seasons. And third, rain gauges would be placed at each workshop site which would help explain variances in improvements between sites resulting from differences in rainfall totals.

11-179WPF: Inventory of Tamarisk Leaf Beetle and Effects on Riparian Habitat in the Colorado, Verde, Salt and Tonto Rivers

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
185	Northern Arizona University	Coconino	$141,972.80	Completed

Project Description: The use of Tamarisk leaf beetles, *Diorhabda spp*. as a potential biocontrol agent against tamarisk began in 1999. Beetles were released in Utah and Colorado in 2000 and since then its range has expanded to include Nevada, Texas, New Mexico and along the Colorado River in Arizona. The effect of defoliation by Tamarisk leaf beetles is likely to affect ecosystem processes, wildlife population dynamics and plant community structure.

This project is expanding upon existing research currently being conducted along the Colorado River to include the Verde, Tonto and Salt Rivers. Each of these rivers has varying amounts of tamarisk cover, but do provide habitat for southwestern willow flycatcher and Yellow-billed Cuckoo. The project includes ground surveys to sample for presence and identification of beetle species, measuring microclimate parameters,

estimating plant cover and identifying plant species, including nonnative plants that may benefit from defoliation.

Completion Summary & Lessons Learned

In 2011 2012 and 2013, three tamarisk leaf beetle sampling trips were conducted to survey for tamarisk leaf beetle. Sampling results indicate that the beetle is present along the Colorado River from Lee's Ferry to Glen Canyon Dam, but absent from the sites along Tonto Creek, Verde River, Upper Salt River and Lower Salt River. As noted in 2011, the north rim drainages of Grand Canyon may be a source for these beetle population expansions along the Colorado River sites, particularly the Paria Canyon drainage. The Little Colorado River within the Navajo Reservation, which includes; northern tamarisk leaf beetle (Diorhabda carinulata) and the Rio Grande River in Texas and New Mexico which includes; Mediterranean tamarisk leaf beetle (Diorhabda elongata), larger tamarisk leaf beetle (Diorhabda carniata) and subtropical tamarisk leaf beetle (Diorhabda sublineata) may all be the sources of this population expansion into the central and southern Arizona sites. Tamarisk leaf beetle expansion into central and southern Arizona (Verde River, Tonto Creek, upper and lower Salt River), where this study was conducted, is expected for 2017 (Tracy et al. 2014). The reduction in tamarisk cover in riparian areas, by beetle defoliation will pave the way for changes in plant community composition and structure, with consequent effects on wildlife populations and ecosystem processes (such as wildfire, hydrological dynamics, and sediment dynamics).

Extensive defoliation of tamarisk caused by tamarisk leaf beetles and the resulting widespread loss of riparian vegetation may have a considerable impact on birds that breed in riparian regions dominated by tamarisk. In St. George, UT, Southwestern Willow Flycatchers demonstrated lowered site fidelity the year after tamarisk defoliation from the tamarisk leaf beetle negatively impacted flycatcher nesting success (Dobbs et al. 2012, Johnson and Nowak 2014). Along the 54 Virgin River at Mesquite, both reduced site fidelity and lower numbers of resident flycatchers were recorded in response to reduced nest success and habitat quality as the result of poor habitat conditions due to the beetle (McLeod and Pellegrini 2013). A similar pattern of reduced site fidelity and lower numbers of breeding flycatchers at Mormon Mesa, Nevada in 2013 was also observed in response to the poor reproductive success and lower habitat quality due to the beetle documented in both 2012 and 2013 (McLeod and Pellegrini 2013). Due to the habitat changes from the tamarisk leaf beetle many bird species may attempt breeding, possibly in reduced quality habitat; or they could spend the breeding season as nonbreeding residents, ultimately affecting overall populations.

Many herpetofauna species may decline in tamarisk that are defoliated region-wide as a result of localized changes in microclimate, (i.e. increased maximum active-season temperatures and decreased relative humidity in defoliated stands; Bateman et al. 2013, 2014). The near-term trophic effects on lizard communities in response to defoliation may be mixed, including both positive (expanded diet) and negative (decreased abundance and/or activity) outcomes. Longer term, removal of tamarisk may provide

opportunities for native re-vegetation (Shafroth et al. 2005, Bateman et al. 2008), so the changes in lizard communities seen as a result of defoliation in areas such as Virgin River drainage may be temporary. If native or non-native forbs, shrubs, and trees recolonize defoliated areas, we would expect corresponding increases in relative humidity and decrease maximum temperatures, potentially increasing habitat suitability for lizards that had previously declined.

Continuing monitoring of the established tamarisk leaf beetle vegetation and microclimate plots on the Colorado River, Verde River, Tonto Creek, upper and lower Salt River would be highly recommended. Long term monitoring of these plots will provide valuable data at the Colorado River sites that have been impacted by the beetle and will likely see major changes to riparian habitat. These changes will likely be from repeated defoliation of the tamarisk trees and ultimately mortality. The Verde River, Tonto Creek and Salt River sites do not currently have tamarisk leaf beetles and therefore continued monitoring at these sites will provide valuable baseline data upon the arrival of the beetle.

Organisms inhabiting riparian woodlands of the southwest United States are species likely tolerant of habitat changes following decades of tamarisk establishment. Because long-term effects of tamarisk biocontrol (i.e. tamarisk leaf beetle) could depend on geographic extent and on how quickly various species of plants establish after defoliation (Shafroth et al. 2005; Sogge et al. 2008), we also suggest future monitoring the effects of tamarisk leaf beetles include sites in Arizona with greater proportions of native riparian trees and across the geographic range of tamarisk. As other vegetation establishes and increases, foliar cover may recover to prebiocontrol conditions, therefore, long-term studies of flora (vegetation plots) and fauna (avian fauna and herpetofauna) following biocontrol establishment could provide a more complete view of indirect effects of tamarisk biocontrol.

Restoration through tamarisk biocontrol can represent an alternative to more costly management efforts, such as mechanical removal or herbicide use. But, the long-term trend for understanding how biocontrol affects ecosystem function (e.g., vegetation growth and structure) will be critical to managing habitats and wildlife impacted by biocontrol. The availability of native habitat and the degree to which wildlife use exotic habitats, such as those dominated by tamarisk, should be considered when managing using biocontrol (Paxton et al. 2011). And therefore we suggest incorporating restoration activities to increase native tree cover in areas likely to be affected by tamarisk biocontrol.

11-180WPF: Pakoon Wash and Pakoon Springs Restoration and Enhancement Project

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
186	USDI Bureau of Land Management	Mohave	$306,353.00	August 31, 2016

Project Description: Pakoon Springs has been identified as one of the largest and most important spring complexes on the Arizona Strip. This project is a continuation of work that was implemented with AWPF funding under Grant Number 06-137WPF, which restored the Pakoon Springs and stream channel complex to natural conditions. The agricultural irrigation conveyances have been removed and the land has been recontoured and revegetated resulting in multiple restored natural spring features. Perennial flows were reestablished into Pakoon Wash after flows were redirected. As a result, the largest perennial stream in Grand Canyon-Parashant National Monument was recreated. That AWPF funded project was recently selected by the BLM as the most successful conservation partnership of the Conservation Lands System.

This project is to continue removal of non-native species, reestablish vegetated historic floodplain conditions, restore proper ecosystem function, enhance project monitoring, collaborate with other habitat and fish and wildlife management agencies, develop strategies for translocation of significant rare native species, and develop a unique field site for education and interpretation efforts in this important area. The channel will be recontoured to restore natural stream function. Bullfrog eradication will continue and translocation of two high priority native species includes the rare native relict leopard frog.

11-181WPF: Hidden Slough and Leopard Frog Marsh Restoration in Glen Canyon National Recreation Area, AZ

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
187	Grand Canyon Wildlands Council	Coconino	$348,901.00	March 31, 2016

Project Description: This project is a 3 year effort initiated by the grantee to assist the National Park Service (NPS) by undertaking riparian restoration and monitoring in the Glen Canyon National Recreation Area downstream from Glen Canyon Dam at two sites. The sites are Hidden Slough, located at river mile 6.5Right, and Leopard Frog Marsh at River Mile 9Left. The grantee has implemented many successful projects in Glen and Grand Canyons including tamarisk control and revegetation of 6 acres at Hidden Slough from 2008 to 2010 and they have constructed a native plant nursery at Lee's Ferry. This project will quantitatively and qualitatively evaluate the recent tamarisk removal and revegetation at Hidden Slough, complete tamarisk control, complete the native revegetation process, phase out the on-site irrigation infrastructure, and develop and test a monitoring program for the NPS. The results of these activities are to guide restoration at Leopard Frog Marsh, which will include habitat restoration planning, tamarisk control, native revegetation and reintroduction of the Northern leopard frog on approximately 1 to 1.5 acres.

14-182WPF: Arundo Eradication & Riparian Restoration of Sabino and Bear Creek, Tucson, AZ

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
188	University of Arizona	Pima	$51,262.00	February 28, 2018

Project Description: This proposal builds upon a six year effort of Arundo donax removal that began in Sabino Canyon Recreation Area in 2007 and that has fully removed the Arundo infestation from the Recreation Area and 1.71 miles of mostly private riparian land downstream from the Forest Service boundary. Arundo donax or giant reed/cane is a non-native plant to the United States that has become invasive along well-watered riparian areas throughout many Western states. Arundo degrades the riparian zone by choking native sycamore and mesquite trees with its rapid rate of growth and vast consumption of water, nutrients, and sunlight. Arundo is a fire hazard and provides no food to riparian dwellers. Previous removal efforts have proven effective, but still 2.58 miles of channel remains to be cleared down to the confluence of the Pantano and Rillito Washes. The three main goals: 1.Remove invasive Arundo donax from Sabino and Bear Creeks; 2.Improve conditions for riparian vegetation and wildlife; 3. Improve transmissions of flood flows. The objectives are: 1.Clear Pima County parcels in Upper and Lower Bear Creek; 2.Clear Canyon Ranch Resort/DeBernardis property along Middle Sabino Creek; 3.Clear Tankersley Estates property along Middle Sabino Creek; 4.Clear infestations in Lower Sabino Creek to the confluence of the Rillito; 5.Monitor previously cleared reaches of Sabino and Bear Creeks.

14-184WPF: Date Creek Riparian Restoration Project

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
190	Date Creek Ranch	Yavapai	$147,877.00	February 28, 2018

Project Description: Date Creek is one of Arizona's unique desert streams with high potential to produce high quality riparian habitats. Date Creek is a tributary to Santa Maria River and part of the Bill Williams River watershed in southwestern Yavapai County, Arizona. Recent habitat assessments have revealed three major problems affecting the functional health of Date Creek: tamarisk, a recent invader, has encroached on many areas and has established to form mature stands; the active channel is unstable as a result of excessive bed load, unrouted flows, and lack of freeboard caused by the invasion of various woody plant and flood debris accumulated over several floods; the native herbaceous aquatic plant composition is impoverished.

This project is focused on establishing essential stream functions that lead to having a more stable and productive stream ecosystem. The project consists of four major phases:

1) Conduct a complete assessment, 2) Removal of invasive and undesirable species, 3) Establishment of channel control structures, 4) Establishment of essential obligate graminoids. This effort will include monitoring to document habitat changes.

14-185WPF: Horseshoe Draw Flood Control, Restoration and Erosion Mitigation Study and Design Project

Map #	Grantee	County	AWPF Funding	Estimated Completion Date
191	Hereford Natural Resource Conservation District	Cochise	$198,625.00	March 31, 2016

Project Description: The Horseshoe Draw Project will take place on the Ladd Ranch, located outside of Sierra Vista, Arizona. The project will benefit the San Pedro River, the watershed and aquifer recharge. Head-cutting at Horseshoe Draw has caused severe erosion and therefore masses of sediment to be transferred downstream into the San Pedro River.

The project will consist of three phases. Phase I requires an engineering company to perform a feasibility study to determine the best method to prevent further soil erosion, control flooding and runoff, and prevent soil loss on the watershed. A preliminary look at the area determined a berm structure would be most suitable; however, this study is required to determine the proper structure or structures needed, and which would be most suitable, as well as the most effective locations for the construction of the berm(s). A berm structure would control the flow of water runoff, which is especially important during intermittent and intense seasonal flooding. Phase II includes a final project design based on findings from Phase 1. Phase III would be construction, which is not being funded through this grant award.

Conclusion

In the upcoming fiscal year, the Commission and staff will continue to make substantial progress toward the restoration, protection and enhancement of river and riparian resources throughout the State.

For the last several years, primary funding for this program has come from CAP in lieu funds pursuant to §48-3715.05. It is anticipated that these funds will no longer be available after 2016 or perhaps before. This funding source has been steadily declining since 2008 and this issue will need to be further addressed in the coming year. The Commission is committed to approving projects that are fiscally responsible and beneficial to the citizens of Arizona.

All final reports for funded projects from 2007-2014 can be viewed on the WPF website: www.azwpf.gov. Final reports generated prior to 2007 can be requested from the Executive Director of the Water Protection Fund.

Appendix A: Map and List of AWPF Projects

The Map and List of AWPF Projects contain a compilation of grants awarded between FY 1995 - 2014 that have been implemented through contracts and had expenditures made against the grant award.

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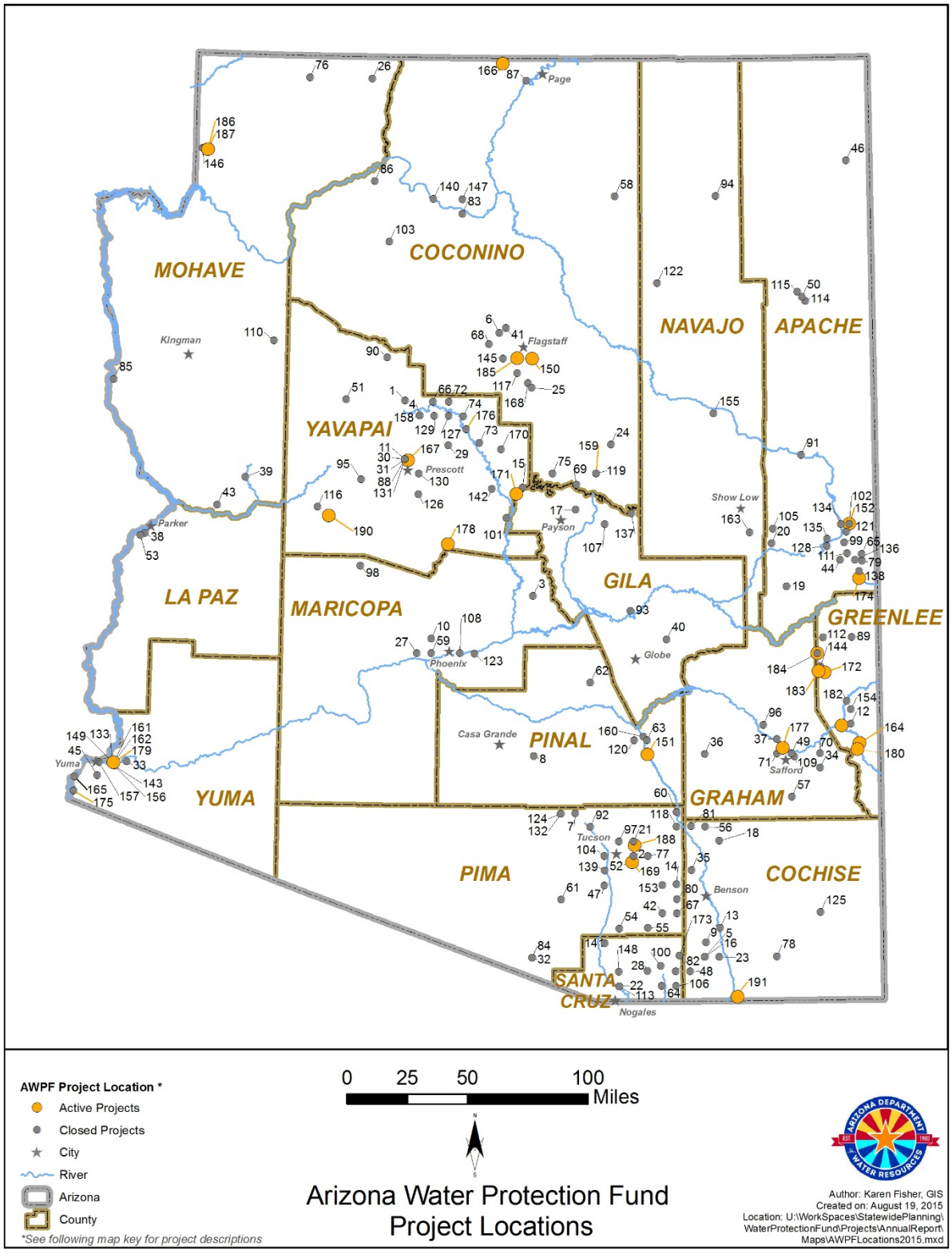
MOHAVE
COCONINO
NAVAJO
APACHE
YAVAPAI
GILA
GREENLEE
LA PAZ
MARICOPA
PINAL
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PIMA
COCHISE
SANTA CRUZ
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AWPF Project Location *
Active Projects
Closed Projects
City
River
Arizona
County
*See following map key for project descriptions
0 25 50 100
Miles
Arizona Water Protection Fund
Project Locations
Author: Karen Fisher, GIS
Created on: August 19, 2015
Location: U:\WorkSpaces\StatewidePlanning\WaterProtectionFund\Projects\AnnualReport\Maps\AWPFLocations2015.mxd

List of AWPF Projects with Map Key

Map #	Grant #	Project Title	Grant Amount	County	Project Status
1	95-001	Stable Isotope Assessment of Groundwater and Surface Water Interaction: Application to the Verde River Headwaters	$21,508.00	YAVAPAI	Closed
2	95-002	Partnership for Riparian Conservation in Northeastern Pima County (PROPIMA)	$78,100.00	PIMA	Closed
3	95-003	Sycamore Creek Riparian Management Area	$115,522.00	MARICOPA	Closed
4	95-004	Road Reclamation to Improve Riparian Habitat Along the Hassayampa and Verde Rivers	$45,693.00	YAVAPAI	Closed
5	95-005	Preservation of the San Pedro River Utilizing Effluent Recharge	$333,863.00	COCHISE	Closed
6	95-006	Critical Riparian Habitat Restoration along a Perennial Reach of a Verde River Tributary	$102,535.00	COCONINO	Closed
7	95-007	High Plains Effluent Recharge Project	$189,000.00	PIMA	Closed
8	95-008	Picacho Reservoir Riparian Enhancement Project	$2,400,000.00	PINAL	Closed
9	95-009	Regeneration and survivorship of Arizona Sycamore	$34,617.00	COCHISE	Closed
10	95-010	Assessment of the Role of Effluent Dominated Rivers in Supporting Riparian Functions	$46,750.00	MARICOPA	Closed
11	95-012	The Comprehensive Plan for the Watson Woods Riparian Preserve	$33,267.34	YAVAPAI	Closed
12	95-014	Gila Box Riparian and Water Quality Improvement Project	$157,223.00	GREENLEE	Closed
13	95-015	San Pedro RNCA Watershed Rehabilitation/Restoration Project	$286,000.00	COCHISE	Closed
14	95-016	Refinement of Geologic Model, Lower Cienega Basin, Pima County, Arizona	$7,390.00	PIMA	Closed
15	95-017	Restoration of Fossil Creek Riparian Ecosystem	$59,693.00	YAVAPAI	Closed
16	95-018	Autecology and Restoration of Sporobolus Wrightii Riparian Grasslands in Southern Arizona	$53,734.00	COCHISE	Closed
17	95-019	Quantifying Anti-Erosion Traits of Streambank Graminoids	$14,910.00	GILA	Closed
18	95-020	Teran Watershed Enhancement	$142,378.38	COCHISE	Closed
19	95-021	Lofer Cienega Restoration Project	$161,204.00	APACHE	Closed
20	95-022	Gooseberry Watershed Restoration Project	$126,406.00	APACHE	Closed
21	95-023	Sabino Creek Riparian Ecosystem Protection Project	$16,385.00	PIMA	Closed
22	95-024	Potrero Creek Wetland Characterization and Management Plan	$75,300.00	SANTA CRUZ	Closed
23	96-0001	San Pedro Riparian National Conservation Area Watershed Protection and Improvement Project	$89,250.00	COCHISE	Closed
24	96-0002	Completion Phase: Hi-Point Well Project	$77,844.40	COCONINO	Closed
25	96-0003	Hoxworth Springs Riparian Restoration Project	$31,545.00	COCONINO	Closed
26	96-0004	Hydrologic Investigation & Conservation Planning: Pipe Springs	$50,000.00	MOHAVE	Closed
27	96-0005	Tres Rios-River Management and Constructed Wetlands Project	$1,000,000.00	MARICOPA	Closed
28	96-0006	Hydrogeologic Investigation of Groundwater Movement and Sources of Base Flow to Sonoita Creek and Implementation of Long-Term Monitoring Program	$155,715.00	SANTA CRUZ	Closed
29	96-0007	Ash Creek Riparian Protection Project	$19,248.00	YAVAPAI	Closed
30	96-0008	Watson Woods Vegetation Inventory	$16,115.00	YAVAPAI	Closed
31	96-0009	Watson Woods Riparian Preserve Visitor Management	$8,556.79	YAVAPAI	Closed
32	96-0010	Rehabilitating the Puertocito Wash on the Buenos Aires National Wildlife Refuge.	$83,432.00	PIMA	Closed

List of AWPF Projects with Map Key

33	96-0011	Lower Colorado River - Imperial Division Restoration	$435,928.00	YUMA	Closed
34	96-0012	Eagle Creek Watershed and Riparian Stabilization	$80,626.00	GRAHAM	Closed
35	96-0013	Happy Valley Riparian Area Restoration Project	$64,697.00	COCHISE	Closed
36	96-0014	Klondyke Tailings Response Strategy Analysis (RSA)	$77,614.00	GRAHAM	Closed
37	96-0015	Abandonment of an Artesian Geothermal Well	$113,360.00	GRAHAM	Closed
38	96-0016	'Ahakhav Tribal Preserve	$1,131,477.00	LA PAZ	Closed
39	96-0017	Big Sandy River Riparian Project	$92,000.00	MOHAVE	Closed
40	96-0018	San Carlos Spring Protection Project	$131,540.00	GILA	Closed
41	96-0019	Response of Bebb Willow to Riparian Restoration	$33,752.00	COCONINO	Closed
42	96-0020	Cienega Creek Stream Restoration	$210,700.00	PIMA	Closed
43	96-0021	Riparian Vegetation and Stream Channel Changes Associated with Water Management along the Bill Williams River	$14,788.00	MOHAVE	Closed
44	96-0022	Saffell Canyon and Murray Basin Watershed Restoration Project	$24,316.00	APACHE	Closed
45	96-0023	Watershed Restoration at the Yuma Conservation Gardens	$31,050.00	YUMA	Closed
46	96-0025	Tsaile Creek Watershed Restoration Demonstration	$152,775.00	APACHE	Closed
47	96-0026	Riparian Restoration on the San Xavier Indian Reservation Community	$591,319.00	PIMA	Closed
48	97-027	Lyle Canyon Allotment Riparian Area Restoration Project	$60,359.57	COCHISE	Closed
49	97-028	Creation of a Reference Riparian Area in the Gila Valley – Discovery Park	$182,000.00	GRAHAM	Closed
50	97-029	Demonstration Enhancement of Riparian Zone and Stream Channel along stretch of Pueblo Colorado Wash at Hubbell Trading Post	$91,110.00	APACHE	Closed
51	97-030	Walnut Creek Center for Education and Research - Biological Inventory	$50,580.00	YAVAPAI	Closed
52	97-031	Lincoln Park Riparian Habitat Project (f.k.a. Atturbury Wash Project)	$154,580.00	PIMA	Closed
53	97-032	'Ahakhav Tribal Preserve - Deer Island Revegetation	$228,800.00	LA PAZ	Closed
54	97-033	Proctor Vegetation Modification	$11,487.00	PIMA	Closed
55	97-034	Oak Tree Gully Stabilization	$42,491.00	PIMA	Closed
56	97-035	Watershed Improvement to Restore Riparian & Aquatic Habitat on the Muleshoe Ranch CMA	$128,315.00	COCHISE	Closed
57	97-036	Stable Isotopes as Tracers of Water Quality Constituents in the Upper Gila River	$27,338.00	GRAHAM	Closed
58	97-037	Talastima (Blue Canyon) Watershed Restoration Project	$310,192.00	COCONINO	Closed
59	97-038	Tres Rios Wetlands Heavy-Metal Bioavailability and Denitrification Investigation	$117,028.00	MARICOPA	Closed
60	97-040	Bingham Cienega Riparian Restoration Project	$84,679.00	PIMA	Closed
61	97-041	Altar Valley Watershed Resource Assessment	$88,730.00	PIMA	Closed
62	97-042	Queen Creek Restoration & Management Plan	$207,595.00	PINAL	Closed
63	97-044	San Pedro River Preserve Riparian Habitat Restoration Project	$336,127.00	PINAL	Closed
64	97-045	Santa Cruz Headwaters Project	$100,445.00	SANTA CRUZ	Closed
65	98-046	EC Bar Ranch Water Well Project	$20,300.00	APACHE	Closed
66	98-047	Upper Verde Adaptive Management Unit	$115,300.00	YAVAPAI	Closed
67	98-049	Empire/Cienega/Empirita Fencing Project	$54,850.00	PIMA	Closed
68	98-050	Watershed Restoration Of A High-Elevation Riparian Community	$304,775.00	COCONINO	Closed
69	98-051	Evaluation of Carex Species for Use in Riparian Restoration	$47,907.00	COCONINO	Closed
70	98-052	Tritium As A Tracer Of Groundwater Sources And Movement In The Upper Gila River Drainage	$41,028.00	GRAHAM	Closed

List of AWPF Projects with Map Key

71	98-054	Fluvial Geomorphology Study And Demonstration Projects To Enhance And Restore Riparian Habitat On The Gila River From The New Mexico Border	$449,872.00	GRAHAM	Closed
72	98-055	Horseshoe Allotment: Verde Riparian Project II	$82,561.99	YAVAPAI	Closed
73	98-057	Upper Verde Valley Riparian Area Historical Analysis	$44,019.00	YAVAPAI	Closed
74	98-058	Effects Of Removal Of Livestock Grazing On Riparian Vegetation And Channel Conditions of Selected Reaches of the Upper Verde River	$116,500.00	YAVAPAI	Closed
75	98-059	Verde River Headwaters Riparian Restoration Demonstration Project	$204,629.00	COCONINO	Closed
76	98-061	Watershed Enhancement on the Antelope Allotment	$137,307.00	MOHAVE	Closed
77	98-062	Partnership For Riparian Conservation In Northeastern Pima County II	$54,734.55	PIMA	Closed
78	98-066	Hay Mountain Watershed Rehabilitation	$116,525.00	COCHISE	Closed
79	99-067	EC Bar Ranch Wildlife Drinker Project	$30,500.00	APACHE	Closed
80	99-068	Lower Cienega Creek Restoration Evaluation Project	$83,272.00	PIMA	Closed
81	99-069	Riparian and Watershed Enhancements On the A7 Ranch - Lower San Pedro River	$521,197.45	COCHISE	Closed
82	99-070	Lyle Canyon Allotment Riparian Area Restoration Project --- Phase 2	$214,211.00	SANTA CRUZ	Closed
83	99-071	Protection Of Spring and Seep Resources of The South Rim, Grand Canyon National Park By Measuring Water Quality, Flow and Associated Biota	$238,953.00	COCONINO	Closed
84	99-072	Leopard Frog Habitat and Population Conservation At Buenos Aires National Wildlife Refuge	$120,485.00	PIMA	Closed
85	99-073	Colorado River Nature Center Backwater ---- Phase 2	$41,500.00	MOHAVE	Closed
86	99-074	Proposal to Inventory, Assess And Recommend Recovery Priorities For Arizona Strip Springs, Seeps and Natural Ponds	$101,856.00	COCONINO	Closed
87	99-075	Glen and Grand Canyon Riparian Restoration Project	$371,285.00	COCONINO	Closed
88	99-076	Watson Woods Preserve Herpetological Interpretive Guide and Checklist	$31,255.55	YAVAPAI	Closed
89	99-077	Blue Box Crossing	$150,000.00	GREENLEE	Closed
90	99-078	Aquifer Framework And Ground-Water Flow Paths In Big and Little Chino Basins	$188,140.00	YAVAPAI	Closed
91	99-079	Little Colorado River Riparian Restoration Project	$404,587.00	APACHE	Closed
92	99-080	Cortaro Mesquite Bosque	$486,650.00	PIMA	Closed
93	99-083	Cherry Creek Enhancement Demonstration Project	$263,225.00	GILA	Closed
94	99-084	Assessments of Riparian Zones in the Little Colorado River Watershed	$79,443.50	NAVAJO	Closed
95	99-085	Kirkland Creek Watershed Resource Assessment	$131,430.00	YAVAPAI	Closed
96	99-086	Abandonment of Gila Oil Syndicate Well #1	$333,790.00	GRAHAM	Closed
97	99-087	Rillito Creek Habitat Restoration Project	$293,000.00	PIMA	Closed
98	99-088	Wickenburg High School Stream Habitat Creation	$69,100.00	MARICOPA	Closed
99	99-089	Town of Eagar/Round Valley Water Users Association Pressure Irrigation Feasibility Study & Preliminary Design	$320,540.00	APACHE	Closed
100	99-090	Redrock Riparian Improvement	$62,350.00	SANTA CRUZ	Closed
101	99-091	Effects of Livestock Use Levels on Riparian Trees on the Verde River	$41,417.00	YAVAPAI	Closed
102	99-092	Little Colorado River Enhancement Demonstration Project	$348,627.94	APACHE	Closed

List of AWPF Projects with Map Key

103	99-093	Coconino Plateau Regional Water Study	$134,200.00	COCONINO	Closed
104	99-094	Santa Cruz River Park Extension	$434,684.00	PIMA	Closed
105	99-095	Brown Creek Riparian Restoration	$34,037.00	APACHE	Closed
106	99-096	Upper Santa Cruz Watershed Restoration	$184,950.00	SANTA CRUZ	Closed
107	99-097	Dakini Valley Riparian Project	$66,130.00	GILA	Closed
108	99-098	Rio Salado Habitat Restoration Project	$950,408.00	MARICOPA	Closed
109	00-099	Gila Reference Riparian Area, Discovery Park	$152,850.80	GRAHAM	Closed
110	00-100	Willow Creek Riparian Restoration Project	$33,480.00	MOHAVE	Closed
111	00-101	Murray Basin and Saffell Canyon Watershed Restoration Project	$260,727.83	APACHE	Closed
112	00-102	Upper Eagle Creek Restoration on East Eagle Allotment of Four Drag Ranch	$66,330.00	GREENLEE	Closed
113	00-103	Riparian Restoration on the Santa Cruz River - Santa Fe Ranch	$49,008.00	SANTA CRUZ	Closed
114	00-104	Continued Enhancement of Pueblo Colorado Wash at Hubbell Trading Post National Historic Site	$69,349.00	APACHE	Closed
115	00-105	Hubbell Trading Post Riparian Restoration with Treated Effluent	$81,951.00	APACHE	Closed
116	00-106	Tres Alamos Ranch Dirt-Tanks-To-Aquatic-Habitat Conversion	$69,220.56	YAVAPAI	Closed
117	00-108	Lake Mary Watershed Streams Restoration Project	$253,119.00	COCONINO	Closed
118	00-109	Lower San Pedro Watershed Project	$249,871.00	PIMA	Closed
119	00-110	Upper Fairchild Draw Riparian Restoration	$35,515.00	COCONINO	Closed
120	00-111	Cooperative Grazing Management For Riparian Improvement on the San Pedro	$228,701.00	PINAL	Closed
121	00-112	Town of Eagar/Round Valley Water Users Assoc. - Additional Mapping For Water Quality Improvements in the Watershed	$151,829.00	APACHE	Closed
122	00-113	Polacca Wash Grazing Management	$267,511.00	NAVAJO	Closed
123	00-114	The Papago Park Green Line Project	$229,152.00	MARICOPA	Closed
124	00-115	Tucson Audubon Society North Simpson Farm Riparian Recovery Project	$127,409.30	PIMA	Closed
125	03-116	Cottonwood Creek Restoration	$185,772.50	COCHISE	Closed
126	03-117	Lynx Creek Restoration at Sediment Trap #2	$179,771.50	YAVAPAI	Closed
127	03-118	Verde River Riparian Area Partnership Project	$111,221.00	YAVAPAI	Closed
128	03-119	Wet Meadows for Water Quality and Wildlife - A Riparian Restoration Project	$137,027.30	APACHE	Closed
129	04-120	Verde Headwaters 3-D Hydrogeological Model Framework and Visualization	$46,634.00	YAVAPAI	Closed
130	04-121	Lynx Creek Restoration	$266,020.00	YAVAPAI	Closed
131	04-122	Watson Woods Riparian Preserve Restoration Feasibility Project	$183,523.80	YAVAPAI	Closed
132	04-123	Tucson Audubon Society, Santa Cruz River Habitat Project, North Simpson Site, Phase 2	$130,786.00	PIMA	Closed
133	04-124	Yuma East Wetlands Riparian Revegetation Project	$285,878.25	YUMA	Closed
134	05-125	Wilkins' Family Little Colorado River Riparian Enhancement Project	$293,618.00	APACHE	Closed
135	05-126	X Diamond Ranch LCR Riparian Enhancement Project	$352,119.00	APACHE	Closed
136	05-127	EC Bar Ranch Reach 8 Water Well and Drinker Project	$22,235.00	APACHE	Closed
137	05-128	Canyon Creek Riparian Restoration Project, Reach 4-5	$106,919.00	GILA	Closed
138	05-129	Georges Lake Riparian Restoration Project	$168,636.50	APACHE	Closed
139	05-130	Riparian Restoration on the San Xavier District - Project Two	$36,353.00	PIMA	Closed

List of AWPF Projects with Map Key

140	05-131	Management & Control of Tamarisk and Other Invasive Vegetation at Backcountry Seeps, Springs and Tributaries in Grand Canyon National Park	$245,500.00	COCONINO	Closed
141	05-132	Esperanza Ranch Riparian Restoration Project	$279,411.50	SANTA CRUZ	Closed
142	05-133	Verde Wild and Scenic River Fence Exclosure	$63,888.50	YAVAPAI	Closed
143	05-134	Quechan Indian Nation Yuma East Wetlands Restoration Project - Phase I	$263,803.25	YUMA	Closed
144	06-135	Double Circle Ranch Riparian Fencing Project	$84,448.00	GREENLEE	Closed
145	06-136	The Arboretum at Flagstaff Wetland Habitat Enhancement	$116,000.00	COCONINO	Closed
146	06-137	Pakoon Springs Restoration Design and Implementation Project	$262,103.00	MOHAVE	Closed
147	06-138	Management and Control of Tamarisk and Other Invasive Vegetation at Backcountry Seeps, Springs, and Tributaries in Grand Canyon National Park - Second Year of Phase II	$258,397.00	COCONINO	Closed
148	06-139	Coal Mine Fence	$187,013.00	SANTA CRUZ	Closed
149	06-140	Yuma Crossing National Heritage Area Yuma East Wetlands Restoration Project - Phase I	$256,790.00	YUMA	Closed
150	07-141	Picture Canyon Rio De Flag Meander Restoration Project	$330,225.00	COCONINO	Active
151	07-142	Reduction of Erosion and Sedimentation along the Lower San Pedro River Through Hydrologic Restoration of Modified Ephemeral Washes	$396,409.00	PINAL	Closed
152	07-143	Little Colorado River & Nutrioso Creek Riparian Enhancement Project	$198,996.00	APACHE	Closed
153	07-144	Evaluation of Riparian Habitat and Headcutting on Lower Cienega Creek	$23,972.00	PIMA	Closed
154	07-145	Kaler Ranch Erosion Control Project, Phase II	$284,332.00	GREENLEE	Closed
155	07-146	Little Colorado River Project on H-Y Ranch River Property	$53,000.00	NAVAJO	Closed
156	07-147	The Effects of Restoration on Wildlife Recovery at the Yuma East Wetlands Restoration Project	$68,016.00	YUMA	Closed
157	07-148	South Channel Phase II Restoration Project	$603,487.00	YUMA	Closed
158	07-149	Control of Tamarisk on 12 Miles of the Upper Verde River	$366,390.00	YAVAPAI	Closed
159	07-150	Fairchild Draw Riparian Restoration Project	$172,674.00	COCONINO	Closed
160	08-151	Test of Riparian Recovery Following Cessation of Groundwater Pumping, Lower San Pedro	$61,795.00	PINAL	Closed
161	08-152	AWPF Yuma East Wetlands 68-acre Riparian Revegetation	$746,667.60	YUMA	Closed
162	08-153	The Effects of Restoration on Herpetofaunal and Mammalian Community Recovery	$156,833.40	YUMA	Closed
163	08-154	Billy Creek Natural Area Riparian Restoration Project	$248,826.00	NAVAJO	Closed
164	08-155	Restoration of the Gila River at Apache Grove	$744,747.00	GREENLEE	Active
165	08-156	Cocopah Colorado River Restoration	$296,708.00	YUMA	Closed
166	08-157	Paria River Exotic Removal Project - Phase I	$293,960.10	COCONINO	Closed
167	08-158	Watson Woods Riparian Preserve Restoration Project	$798,988.00	YAVAPAI	Closed
168	08-159	Hoxworth Springs Stream Channel Restoration Project	$142,543.20	COCONINO	Closed
169	08-160	Atturbury Wash Riparian Stewardship Project	$390,839.00	PIMA	Active
170	08-161	Montezuma Well Riparian Pasture Restoration Project	$296,155.00	YAVAPAI	Closed
171	09-162	Middle Fossil Creek Riparian Habitat Protection and Restoration	$250,348.00	GILA	Active
172	09-163	Double Circle Ranch Erosion Control Project	$35,356.00	GREENLEE	Closed
173	09-164	Babocomari River Riparian Protection Project	$118,125.00	SANTA CRUZ	Closed
174	09-165	Alpine Ranger District Riparian Improvement	$372,579.00	APACHE	Closed

List of AWPF Projects with Map Key

175	09-166	Hunter's Hole Riparian and Wetland Restoration Project	$683,345.87	YUMA	Closed
176	09-167	Tavasci Marsh Wetland Restoration Project	$374,838.00	YAVAPAI	Closed
177	09-169	Gila River Water Conservation Education Program	$148,612.80	GRAHAM	Closed
178	09-171	Black Canyon Riparian Restoration Project	$291,700.00	YAVAPAI	Closed
179	11-172	Avifaunal and Butterfly (Lepidoptera) Recovery in Restored Wetland and Riparian Habitats	$100,758.00	YUMA	Closed
180	11-173	Invasive Weed Control - Gila River Corridor, Greenlee County	$261,995.96	GREENLEE	Closed
181	11-174	Eagle Creek Riparian Restoration at Filleman Crossing	$265,776.00	GREENLEE	Cancelled
182	11-175	E. Coli Reduction on the San Francisco River through Alternative Livestock Water on the Kaler Ranch, Phase II	$137,594.43	GREENLEE	Closed
183	11-176	Double Circle Ranch Erosion Control Project Phase II	$36,866.60	GREENLEE	Closed
184	11-177	Eagle Creek Riparian Protection Project	$136,714.11	GREENLEE	Closed
185	11-179	Inventory of Tamarisk Leaf Beetle and Effects on Riparian Habitat in the Colorado, Verde, Salt and Tonto Rivers	$141,972.80	COCONINO	Closed
186	11-180	Pakoon Wash and Pakoon Springs Restoration and Enhancement Project	$306,353.00	MOHAVE	Active
187	11-181	Hidden Slough and Leopard Frog Marsh Restoration in Glen Canyon National Recreation Area , AZ	$348,901.00	MOHAVE	Active
188	14-182	Arundo Eradication & Riparian Restoration of Sabino and Bear Creek, Tucson, AZ	$51,262.00	PIMA	Active
190	14-184	Date Creek Riparian Restoration Project	$147,877.00	YAVAPAI	Active
191	14-185	Horseshoe Draw Flood Control, Restoration and Erosion Mitigation Study and Design Project	$198,625.00	COCHISE	Active

* The "Grant Amount" column represents the full grant awarded for each project and will total more than the grant disbursements and grant obligations sections on the financial page. Some grants have been completed for less money than the amount budgeted while others have terminated prior to expenditure of the full grant amount. This column has not been changed to reflect these situations.

Appendix B: Financial Statement

ARIZONA WATER PROTECTION FUND
Combined Statement of Receipts, Expenditures and Fund Balance
For the Fiscal Year ending June 30, 2015
(000's Omitted)

FUND BALANCE - July 1, 2014	$3,719
RECEIPTS:	
Investment Income	23
Interstate Water Sales (CAP)	96
Receipts and Donations	
TOTAL - RECEIPTS	119
EXPENDITURES:	
ADWR Support	194
ASLD Support	
Commission Expenses	
Grant Disbursements	360
Legislative Transfers Out	
TOTAL - EXPENDITURES	554
FUND BALANCE	3,284
LESS: REMAINING GRANT OBLIGATIONS	(1,862)
UNCOMMITTED FUND BALANCE - JUNE 30, 2015	**$1,422**
ACCOUNTS:	
GRANT FUNDS	$1,399
ADMINISTRATION EXPENSES	23
TOTAL - ACCOUNT BALANCE	**$1,422**