Arizona Water Protection Fund
FY 2009 Grant Application Review

Application # WPF0379 **Applicant:** HAROLD FILLEMAN

Title of Project: EAGLE CREEK RIPARIAN RESTORATION AT FILLEMAN CROSSING

Additional materials were submitted with this application that could not be reproduced and distributed for review. These materials may be reviewed in person at the Arizona Water Protection Fund offices at (3550 N. Central Avenue, 4th Floor, Phoenix). The additional materials available are the following:

_____ **Maps**
_____ **Photographs**
✓ **Disk** APPLICATION
_____ **Other**

COPY

Arizona Water Protection Fund
Application Cover Page
FY 2009

WPF1379

Title of Project: Eagle Creek Riparian Restoration at Filleman Crossing

Type of Project:
- ☒ Capital or Other
- ☐ Water Conservation
- ☐ Research

Stream Type:
- ☐ Perennial
- ☒ Intermittent
- ☐ Ephemeral

Your level of commitment to maintenance of project benefits and capital improvements:
☐ < 5 years ☒ 5-10 years ☐ 11-15 years ☐ 16-20 years

Applicant Information:
Name/Organization: Harold Filleman
Address 1:
Address 2:
City:
State:
ZIP Code:
Phone:
Fax: none
Tax ID No.: ss # will be provided upon grant approval

Inside an AMA: Yes ☐ No ☒

If yes, which AMA:
- ☐ Phoenix
- ☐ Tucson
- ☐ Prescott
- ☐ Pinal
- ☐ Santa Cruz

Type of Application:
- ☒ New
- ☐ Continuation

Contact Person:
Name: Jan Holder
Title: Program Manager
Phone:
Fax:
e-mail:

Any Previous AWPF Grants:
☐ Yes ☒ No

If yes, please provide Grant #(s):

Arizona Water Protection Fund Grant Amount Requested:

$ 167,233.19

If the application is funded, will the Grantee intend to request an advance:
☒ **Yes** ☐ **No**

Matching Funds Obtained and Secured:

Applicant/Agency/Organization:	Amount ($):
~~1. Applicant~~	$109,070.00
2. U. S. Forest	$ 25,000.00
3. U.S.F.W.S. Partners for Fish and Wildlife Grant Program	$134,070.00
Total: ~~$0~~	

Has your legal counsel or contracting authority reviewed and accepted the Grant Award Contract General Provisions?
☐ Yes ☒ No ☐ N/A

Signature of the undersigned certifies understanding and compliance with all terms, conditions and specifications in the attached application. Additionally, signature certifies that all information provided by the applicant is true and accurate. The undersigned acknowledges that intentional presentation of any false or fraudulent information, or knowingly concealing a material fact regarding this application is subject to criminal penalties as provided in A.R.S. Title 13. The Arizona Water Protection Fund Commission may approve Grant Awards with modifications to scope items, methodology, schedule, final products and/or budget.

Harold Filleman	Landowner
Typed Name of Applicant or Applicant's Authorized Representative	**Title and Telephone Number**
X Harold R. Filleman	6/5/2008
Signature	**Date Signed**

RECEIVED
JUN 11 2008
ARIZONA WATER PROTECTION FUND

The Eagle Creek Riparian Restoration at Filleman Crossing

3) Executive Summary

The Eagle Creek Road has been used for over a century. The road is a major influence to the health and stability of the Eagle Creek, as it parallels Upper Eagle Creek for about 12 miles, and crosses it three times. The location of this project – the Filleman Crossing, was originally perpendicular to Eagle Creek when it was constructed and dedicated to Greenlee County in 1934 and has always been deep and difficult to maneuver. After the flood of 1993, emergency repair work created a new approach that resulted in the road traveling upstream within the creek for approximately 200 feet. Unfortunately, Greenlee County had limited funds for road repair and proper repairs were costly.

Recently, the Apache Sitgreaves Clifton District Ranger, Frank Hayes, was able to obtain limited funds to relocate and repair the crossing temporarily. But we need to harden the crossing and revegetate the area to ensure the continuing restoration of the Eagle Creek Riparian Corridor.

The Greenlee County Roads Manager and Forest Service specialists, including a hydrologist and roads engineers have evaluated the area, and will develop more complete schematic diagrams for construction activities. All work will be performed through an Apache-Sitgreaves Road Maintenance Constructor experienced in similar construction activities, and oversight will be provided by the Forest Service technical specialists. Monitoring of the project will be jointly conducted by the Gila Watershed Partnership and the Forest Service, and include an education and outreach plan that will educate the local Eagle Creek community and our policy makers on the project.

We have been able to secure match funding for the project from the USFS, USFW Partners for Fish and Wildlife, Greenlee County, and a local landowner.

This project, the Eagle Creek Riparian Restoration at Filleman Crossing is just one small piece of a much larger, continuously developing part of the dynamic approach to the recovery of Eagle Creek. Implementation and long term, sustainable maintenance of this valued road project will be effective in speeding recovery of Eagle Creek, reducing downstream sedimentation and turbidity, and protecting and enhancing habitat for federally listed species.

Project Overview

Background of the Area

Eagle Creek, with its almost pristine cottonwood and willow gallery, is designated as a priority one stream by the U. S. Forest Service It is an 83 mile tributary to the Gila River located in Greenlee County, Arizona. It is an intermittent stream with surface water occurring only 2-3 months a year.

In addition to the two federally protected fish with critical habitat occurring for both the Threatened loach minnow (*Tiaroga cobitis*) and Endangered Gila chub (*Gila intermedia*), the Endangered Southwestern willow flycatcher, Threatened Mexican spotted owl, Threatened Chiricahua leopard frog, and the Experimental Non-Essential population of the Mexican Gray Wolf of the Blue Recovery Area occur or have potential to occur within the Eagle Creek Watershed. Other species occurring or potential to occur in the Eagle Creek Watershed include a variety of Forest Service Sensitive and Management Indicator Species including: native fish, amphibians, reptiles, raptors, insects, neotropical songbirds, and plants.

Human influences to Eagle Creek have come primarily from livestock grazing, water development, mining, irrigated agriculture, roads, recreation, beaver removal, and flood control and channelization. Although the area is remote and sparsely settled, these human activities caused the worst damage 50 to 100 years ago to the watershed and the stream channel. Altered hydrologic conditions within the Eagle Creek watershed have resulted in a braided stream channel throughout much of the upper, non-canyon reach of Eagle Creek. Surface flow in areas of the creek ceases during parts of the year, where anecdotal information from local residents indicates the stream may have flowed perennially throughout the year in the early 1900's.

Grazing by livestock has been the primary pervasive use of the Eagle Creek watershed for the past 150 years with substantial alteration of watershed vegetation, soil, erosion, and hydrologic characteristics. Livestock grazing within the watershed has been reduced from historic levels and the Forest Service and private landowners have been working cooperatively to improve the management of livestock in the riparian corridor of Eagle Creek since 1993. These cooperative efforts have facilitated an increase in riparian woody species composition and age class with significant improvement in watershed conditions.

In 1993 the Clifton Ranger District requested that permittees and private land holders to fence out the Eagle Creek riparian zone to come into compliance with the Standards and Guidelines of the Forest Plan for priority one riparian areas. As of 1995 fencing was in place to exclude Eagle Creek from these allotments.

Also affecting the Eagle Creek watershed was the historic cutting of timber for mine construction and fuel.

Changes in stream flow and hydrologic cycles have caused reduction in the presence of large riparian trees and loss of recruitment along Eagle Creek overall. In the past aquatic habitat diversity in Eagle Creek has been low with few pools and a dominant habitat of shallow runs and riffles over unstable cobble-gravel-boulder substrate. According to a recent Forest Service survey, there is an upward trend in habitat conditions with increases in pool frequency and more balanced pool riffle ratios since 1994.

Road construction, reconstruction, and maintenance have resulted in substantial alterations in the hydrologic regime of Eagle Creek.

After decades of suppression, the reintroduction of fire to the system helps return the vegetation conditions to a more natural state by reducing the amount of woody fuel species such as junipers that have built up over the past 50 plus years. Reduction of these species creates more surface water availability in the watershed. Another goal of restoration is to reduce the potential for

catastrophic fire that can burn over sensitive riparian corridors and have negative effects on native fish species.

The U.S. Forest Clifton Ranger District, in cooperation with Greenlee County, has taken a proactive road maintenance approach along the 22 mile Forest Road 217 and especially in the 8 mile Eagle Creek corridor since about 1993. Maintenance improves access for Eagle Creek residents and reduces future reconstruction disturbance that creates excess siltation. Maintenance includes improved hardening of four Eagle Creek crossings, three on private land and one on reservation land. Hardening of the crossings both in the stream and the approaches to the stream is known to reduce siltation within critical habitat for loach minnow and Gila chub fish species.

The Filleman road crossing is one of three low water crossings in Eagle Creek along road 217. Frequent flood events require ongoing maintenance of these locations. Maintenance includes, hardening the crossings and approaches to reduce the amount of sediment input into the stream. The Filleman Crossing has been rerouted within the last year to eliminate a 200 foot in-stream travel route by making the crossing more perpendicular to the stream, improving habitat quality for federally listed fish and wildlife species.

Floods in 1979, 1983, 1993, 1999 and 2005 all significantly impacted the road and required extensive rebuilding of three main low water creek crossings to allow the road to be passable for both private residents along Eagle Creek and for public access. Emergency repairs from the 1979 and 1983 floods required extensive work on several sections of roadway that has typically involved blading of the road bed and the placing of material into stream crossing approaches and within the wetted channel of the creek to harden and stabilize the crossings. The Apache Sitgreaves National Forests and Greenlee County have cooperatively maintained FR 217 under Cooperative Agreement. Greenlee County has an easement which was established in 1953 under the road maintenance cooperative agreement.

Annual high flows associated with monsoonal rain events and spring runoff in the Upper Eagle Creek watershed require that regular maintenance of the three road crossing occur on a near annual basis. Average maximum streamflow has been 5,356 cubic feet per second (cfs), but the maximum annual streamflow has ranged from a high of 36,800 cfs in 1993 to low of 95 cfs in 1996 (data courtesy of USGS 2007, peak flow data report, below). As there are year long residents along Eagle Creek, FR 217 needs to be maintained to allow for safe passage for both residents and visitors to the Forest.

Background of the Road Crossings

The Eagle Creek Road – U.S. Forest Service road 217, under easement to Greenlee County for general maintenance, parallels Upper Eagle Creek for about 12 miles until it ends at the Honeymoon Campground, some 22 miles from State Highway 191. Maintenance and use of the Eagle Creek road has occurred for over a century, and continues to influence the health and stability of upper Eagle Creek, especially where the road crosses the creek. Eagle Creek road crosses Eagle Creek at three locations. The location of this project – the Filleman Crossing, was originally perpendicular to Eagle Creek when originally constructed and dedicated to Greenlee County in 1934. The crossing has always been deep and difficult to maneuver.

After the flood of 1993, the north approach became a steep cutbank. Emergency repair work created a new north approach that resulting in the road traveling upstream within Eagle Creek for approximately 200 feet. The crossing was never returned to the original perpendicular crossing. At that time, Greenlee County had limited resources for road repair and the original location was difficult and costly to repair to a safe condition. In addition, with the progression of time we now understand the importance of protecting our riparian resources, and the wildlife it supports, through road maintenance and reconstruction. In the last decade or more, Greenlee County and Forest Service road

managers have applied Best Management Practices (BMP's) developed to compliment and improve on natural riparian recovery processes, and the proposal to enhance the Filleman crossing is based on this experience and basic hydrological engineering.

The Apache Sitgreaves Clifton District Ranger, Frank Hayes, has previously obtained limited funds to relocate and repair the crossing though several sources, including Forest Service Resource Advisory Committee grants, Forest Service Roads Legacy appropriated funding and a grant with USFWS Partners for Fish and Wildlife. Minimal funding has been available to obtain suitable aggregate and angular rock materials and additional funding to implement the proposed project to stabilize and enhance the Filleman crossing as designed.

Goals

To address the source of sedimentation and turbidity from vehicles and frequent maintenance in this road crossing, to reduce siltation within critical habitat for loach minnow and Gila chub fish species, and to speed recovery of the Eagle Creek riparian corridor. This project is one in a series of projects completed in the Eagle Creek sub watershed since 1993, in cooperation with the Apache Sitgreaves Forest and District Ranger, Frank Hayes. The projects have been initiated by different entities, the USFS, Greenlee County, the Eagle Creek Watershed Association, the Gila Watershed Partnership, and a number of private residents with a goal of a healthier, more sustainable riparian area and watershed.

Objectives

This project seeks to address and eliminate the problem of excessive sedimentation in Eagle Creek and speed recovery to the riparian area by:

- Installing a more stable, sustainable road crossing. We will relocate the road and harden to reduce sedimentation
- Revegetating the immediate area to stabilize the approaches and areas of disturbance due to construction
- Monitoring of the area will ensure that the restoration work and revegetation are maintained properly
- An Education and Outreach Plan will educate and inform the community

Statement of Problems/Causes

Roads throughout the watershed are a significant source of sediment in Eagle Creek. The crossing has always been deep and difficult to maneuver. The crossing has been recently returned to a perpendicular crossing by the U.S. Forest. However, until we repair the roadway in a more sustainable, stable manner, the road crossing will continue to need frequent repair, requiring equipment in the stream channel. In addition, the sediment caused by vehicular traffic will be greatly reduced on a long-term basis.

Statement of Solutions

We need to repair the roadway in a more stable, sustainable manner, and revegetate the area to speed recovery. The Greenlee County Roads Manager and Forest Service specialists, including a hydrologist and roads engineers have evaluated the area, and will develop more complete schematic diagrams for construction activities that will harden the crossing and reduce the damage to the area from vehicular traffic.

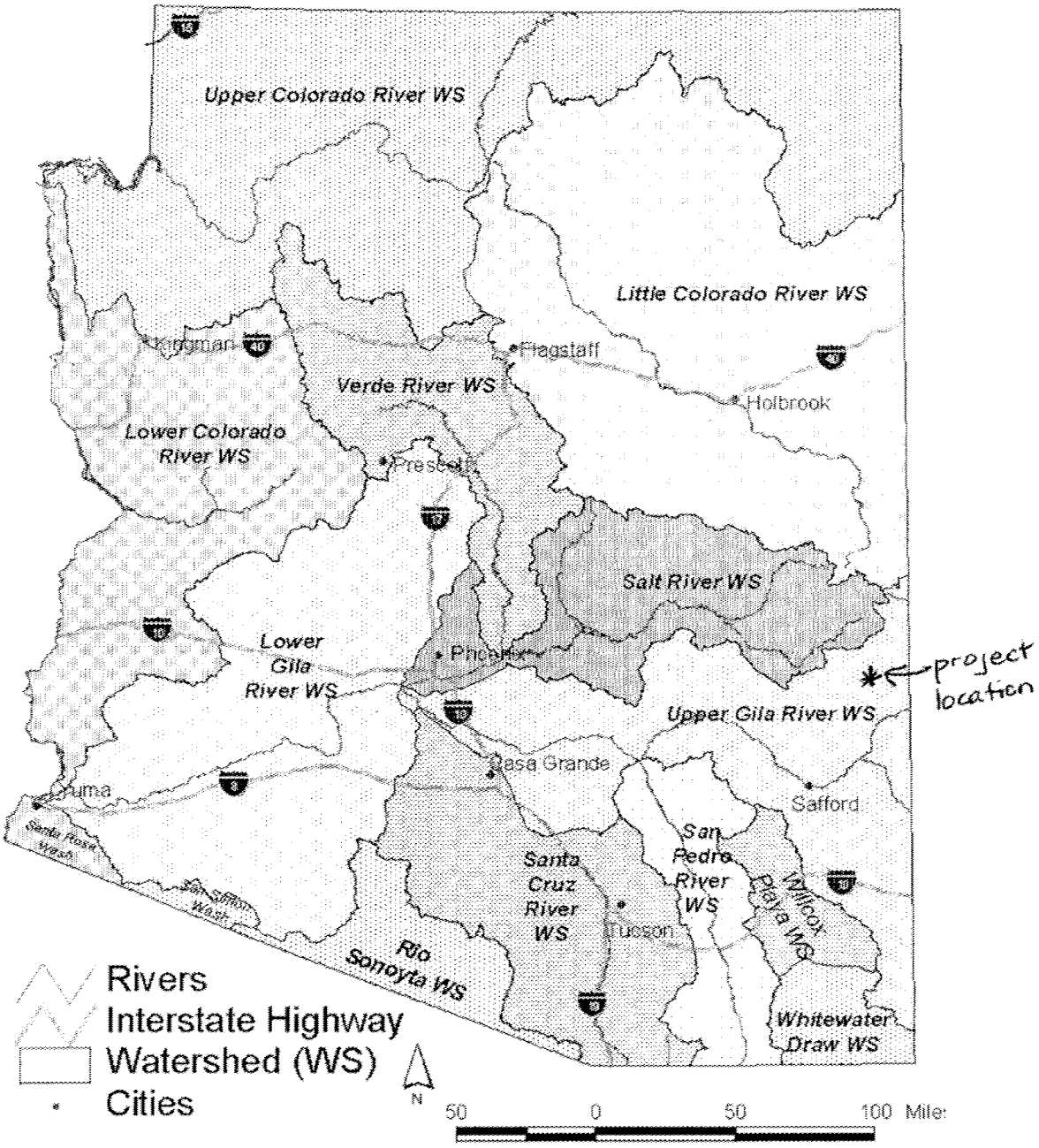
The crossing will not be widened, and rock will be placed with a front-end loader both upstream and downstream of the crossing for about 20 feet to allow creation of an effective buffer and riffle. Initial sediment disturbance will be minimal, little more than normally occurs during vehicle

crossings. This method has been used on other crossing in Arizona with very good success. The Greenlee County Roads Manager and Forest Service Hydrologist will assess what materials are needed and draw a schematic diagram for work our work plan.

Statement of Project Years of Benefit

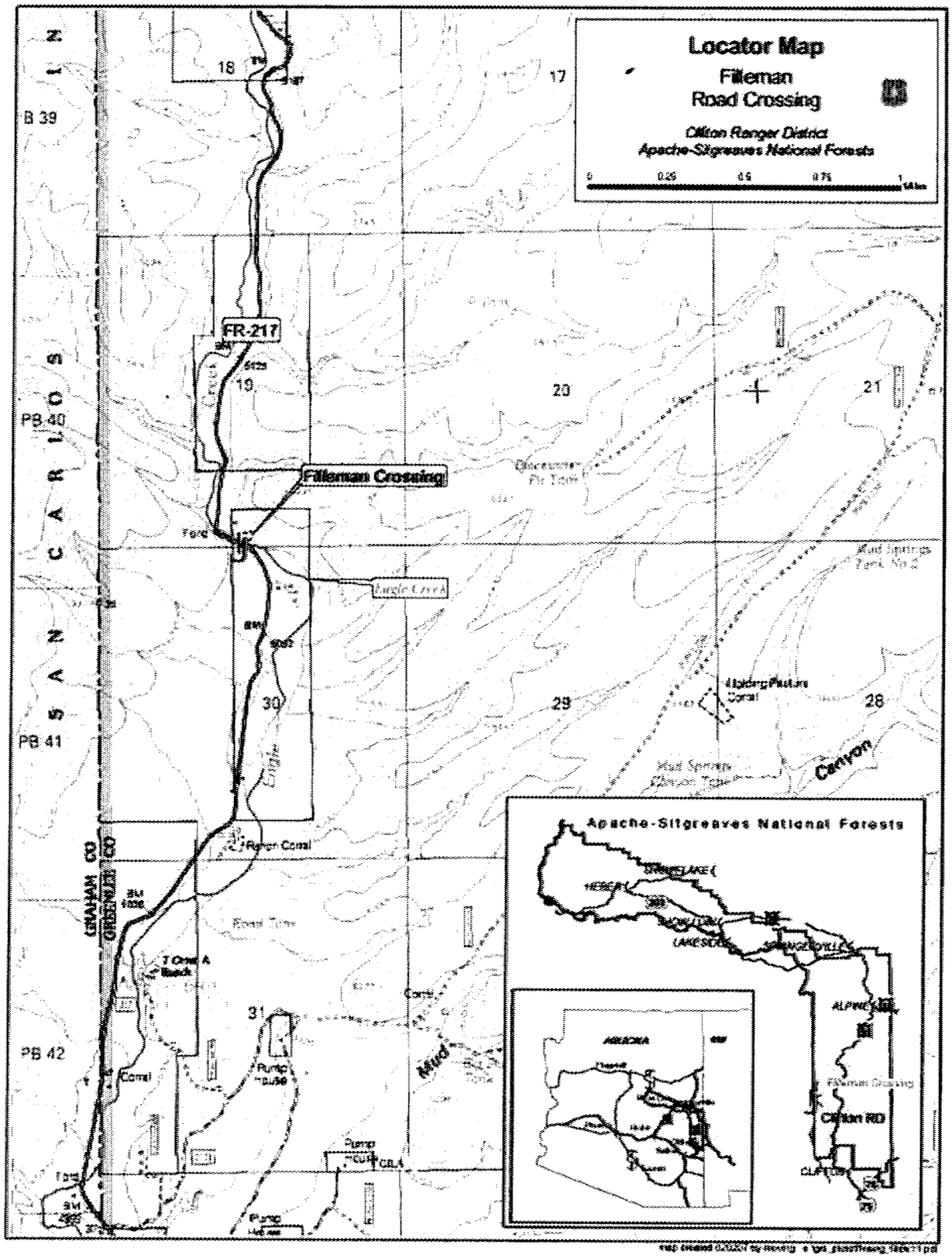
The Greenlee County Roads Manager and Forest Service Hydrologist, predict a minimum of twenty year lifespan for the improvements. The benefit to the Eagle Creek riparian area and to the watershed will be twenty years or more.

Arizona Watershed Map
FY 2009



Title of Project: Eagle Creek Riparian Restoration at Filleman Crossing

Project Location and Environmental Contaminant Information



Project Location & Environmental Contaminant Information
FY 2009

Project Location Information

1. County: Greenlee	2. Section: 19	3. Township: 1N	4. Range: 28E

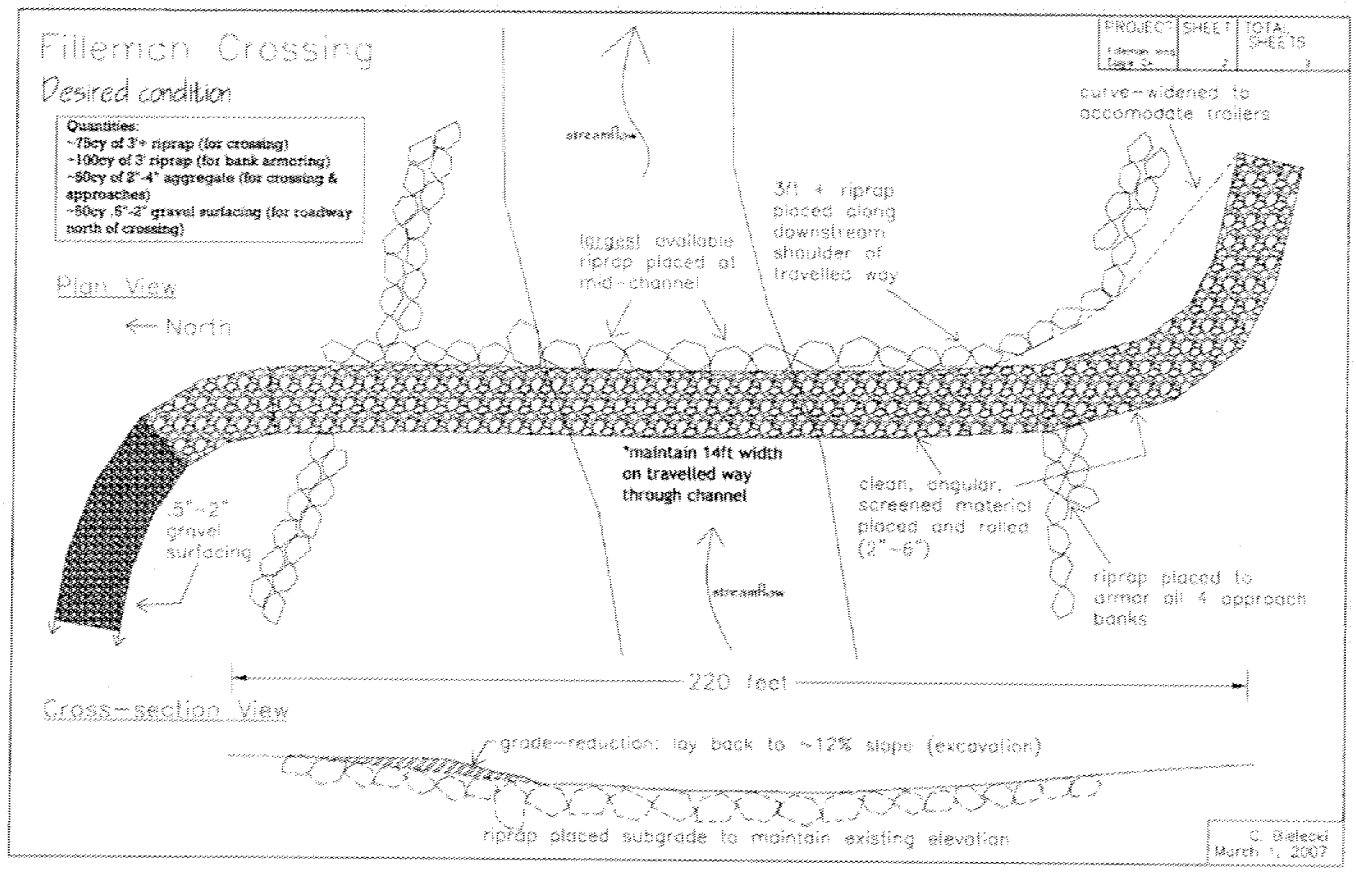
5. Watershed: Upper Gila River
6. Name of USGS Topographic Map where project area is located: Robinson Mesa
7. State Legislative District: 1
   (Information available at http://156.42.40.10/mapping/default2.asp?tname=Interim.2004.Legislative.Map)
8. Land ownership of project area: Private - Harold Filleman
9. Current land use of project area: road crossing
10. Size of project area (in acres): 1/ 2 acre
11. Stream Name: Eagle Creek
12. Length of stream through project area: 300 feet
13. Miles of stream benefited: 1 miles
14. Acres of riparian habitat: 6 acres will be:
    - ☒ Enhanced
    - ☐ Maintained
    - ☐ Restored
    - ☐ Created

15. Provide directions to the project site from the nearest city or town. List any special access requirements:
Head North on State Road 191 out of Morenci, Arizona. Travel approximately 42 miles (or approximately 1 hour and 15 minutes), until just past mile markerr 188. Turn left at Upper Eagle Creek Road sign. Travel approximately 13 miles (or approximately 35 minutes) until you reach the Filleman Crossing on Eagle Creek. It is not marked. The road is often not accessible in bad weather conditions without a 4-wheel-drive vehicle.

Environmental Contaminant Location Information

1. Does your project site contain known environmental contaminants? ☐**YES** ☒**NO** If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:
   -
2. Are there known environmental contaminants in the project vicinity? ☐**YES** ☒**NO** If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:
   -
3. Are you asking for Arizona Water Protection Fund monies to identify whether or not environmental contaminants are present? ☐**YES** ☒**NO**

Project Schematics



Scope of Work

Task 1. Permits, Authorizations, Clearances, and Agreements
Task Description: The Grantee will obtain all permits, authorizations, clearances and agreements necessary to conduct the work described in this scope of work, which may include, but are not limited to:

a) Archeological survey and cultural resource clearance (SHPO);
b) Clean Water Act Section 404 permit - Army Corps of Engineers;
c) Clean Water Act Section 401 permit - Arizona Department of Environmental Quality;
d) Biological Assessment and Evaluation
e) Consultation with Arizona Game and Fish, and ESA Section 7 Consultation with US Fish and Wildlife Service;
f) County grading permit (if needed);
g) Pollution prevention plan;
h) Landowners access agreements;
i) Maintenance and liability agreements from landowners (if necessary);
j) Greenlee County Flood Control Permit (if needed);

All permits and authorizations will be obtained and submitted to the Project Manager prior to any ground disturbing activities.

Task Purpose/Objective: To comply with all local, state, and federal permit requirements, environmental laws such as NEPA and obtain legal access to project area. As the following federally-listed and sensitive species or habitats have been identified in the project area, consultation with the Arizona Game and Fish, US Forest Service, and USFWS is expected. Eagle Creek is as part of Management Area 3 (Riparian) within the Apache-Sitgreaves National Forests Plan and is identified as a Priority 1 stream for its importance to viability and recovery of native fish, particularly threatened and endangered species, including spikedace, (*Meda fulgida*), loach minnow (*Tiaroga cobitis*), and Gila chub (*Gila intermedia*). Eagle creek also offers habitat for one of the largest assemblages of other native fish in Arizona, including Longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys osculus*), roundtail chub (*Gila robusta*), desert sucker (*Pantosteus clarki*), and Sonora sucker (*Catostomus insignis*). Eagle creek is also recognized as breeding habitat for a very diverse array of neo-tropical bird species, including threatened Southwest willow flycatcher, and several forest and riparian indicator bird species such as common black-hawk (*Buteogallus anthracinus*), Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*),The grantee will also submit copies of all sub-contractor agreements describing all activities to be performed and delineating responsible parties for each activity.

For the purposes of site access, the Grantee shall submit binding agreement between Grantee and any affected landowners allowing access.

Deliverable Description:

(1) Copy of Maintenance Easement for Greenlee County
(2) Copy landowner educational access agreements
(3) Copies of site access agreements or letters between Grantee and landowner
(4) Copy of SHPO clearance
(5) Copies of AZGF and FWS Consultations
(6) Copy of 404 permit from Army Corps of Engineers
(7) Copy of 401 permit from ADEQ, as applicable.
(8) Copy of Pollution Prevention Plan

(9) Copies of sub-contractor agreements describing all activities to be performed and delineating responsible parties for each activity

Deliverable Due Date:

(1)-(3) Upon award of grant or by December 1, 2009.

(4)-(8) Prior to any ground disturbing activities, expected between Jan.-March 30, 2010.

(9) Prior to initiation of any sub-contracted work.

AWPF Reimbursable Cost: $11,877.18 (Includes 5% administrative costs)
Matching Cost: $31,725.00

Task 2. Project Work Plan

Task Description: Grantee and partners will prepare a final Project Work Plan outlining various phases and expectations of project design and implementation including:

1. A description of existing conditions of physical components of affected area at material site and at the Filleman Crossing;
2. Final Design and Implementation for materials development and construction and hardening including materials and equipment needed, contributions by partners and contracted work and materials, and construction sequence.
3. Revegetation for stabilizing affected or impacted areas especially those on private lands;
4. Monitoring including pre, during, and post construction activities, and long-term effects monitoring criteria and baseline data collection. Monitoring plan will be completed in draft and submitted for review and approval prior to any ground disturbing activities.
5. Education and outreach activities during, post, and long-term effects from expected impacts and benefits from construction and future maintenance activities.

Task Purpose/ Objective: A well documented plan to ensure correct design and proper installation of road crossing enhancements and armoring, mitigation of impacts to associated private lands, effective and valued monitoring of all associated activities to document success and offer corrective actions for future similar work as needed, and to provide well thought out opportunities for sharing learning experiences for similar approaches to road crossing management on associated Forest and other public and private lands where County or Forest maintenance occurs.

Deliverable Description: Copies of monitoring plan, material development plan, road relocation and hardening plan, revegetation and rehabilitation plan, and the education and outreach plan.

Deliverable Due Date: April 1, 2010

AWPF Reimbursable Cost: $7,980.00 (Includes 5% administrative costs)
Matching Cost: $3,500.00

Task 3. Implement Monitoring Plan

Task Description: Develop a plan that outlines parameters of monitoring, timelines, and assigned responsibilities. Provides specificity to parameters identified to assess if project objectives have been met. Plan will include a description of parameter and technique(s) to be used to measure, timeline for collection of baseline pre and post construction, and long-term effects data, and persons or entities assigned responsibility for parameter monitoring.

Task Purpose/ Objective: To establish and validate the success of the project.

Deliverable Description: Baseline Monitoring Plan, Pre and Post Monitoring progress reports; Final Monitoring report including initial long-term effects assessment.

Deliverable Due Date: Monitoring Plan - April 15, 2010; Pre Construction monitoring progress report with baseline data – before ground disturbing activities expected about June 15, 2010; Post construction monitoring progress report – following construction activities, expected by July 15,

2010; Final first year progress report – following revegetation task completion and summer growth, expected by October 1, 2010; Long-term effects monitoring report, expected October 1, 2011.

After the project is complete, the project location will be added to the USFS annual monitoring plan.

AWPF Reimbursable Cost: $8,404.20
Matching Cost: $2,050.00

Task 4. Implement Material Development Plan

Task Description: Suitable, available, angular materials are needed to complete the stabilization and hardening of the Filleman crossing. This task will involve additional development including creation and screening of suitable 8-10" and 3-4" angular materials for removal of fines. Work will involve ripping materials pit with a D-7 dozer and/or blasting for initial materials development and screening for suitable materials as noted above.

Task Purpose/ Objective: Existing suitable materials for stabilization and hardening of the Filleman Crossing partially exist at the Honeymoon pit from a previous project completed in 2001, and at adjacent daylight sites 1 mile south of this location. Several hundred yards of larger 3-6 ft. rip rap material exists at this location. However, smaller angular cleaned material is only available in small quantities at another location 15 miles to the south. Development and hauling materials is cost-prohibitive from this site to the south. Efficient and safe use of equipment and reduced impacts to roadways is a key factor in improving pit materials at Honeymoon, reducing haul times by over 10 miles, and associated costs and exposure to contractors and forest visitors as well.

Deliverable Description: Materials development Progress report
Deliverable Due Date: June 1, 2010
AWPF Reimbursable Cost: $27,783.00 (Includes 5% administrative costs)
Matching Cost: $47,775

Task 5. Implement Road Relocation and Hardening Plan

Task Description: The existing roadway will be stabilized and enhanced to ensure that the perpendicular crossing is brought to natural stream gradient, is stabilized against future above bank full flows, and compacted or hardened to ensure longevity of use and for maintenance. Approaches and the crossing will be imbedded and re-inforced with both large, mid-size, and smaller angular materials obtained from Honeymoon materials pit. Geo-textile will be inlaid as needed to assist in stabilization and interlocking of large angular materials. Stream crossing will be brought to natural gradient, flattened to create a riffle reach, and imbedded to ensure stabilization and longevity of the actual crossing bed. Impaction will be completed using both a small and larger vibratory roller.

Task Purpose/ Objective: To create a hardened stream crossing that can withstand heavy flows during peak precipitation events, but will also reduce in-stream impacts from sediment disturbance and downstream deposition, encourage continuing riparian vegetation establishment, and reduce long term road maintenance.

Deliverable Description: Filleman Crossing Stabilization and Hardening report
Deliverable Due Date: Upon completion of stabilization work, expected by July 15, 2010.
AWPF Reimbursable Cost: $89,285.39 (Includes 5% administrative costs)
Matching Cost: $42,745

Task 6. Implement Revegetation Plan

Task Description: Seed and hand mulch disturbed areas on private and Forest Service lands, not expected to exceed 1 acre total

Task Purpose/ Objective: Stabilize and mitigate disturbed areas to prevent erosion and sedimentation into Eagle Creek. Seed mix and straw will be certified weed free by Forest Service.
Deliverable Description: Report with photos showing areas of disturbance pre and post treatment, and post growth periods.
Deliverable Due Date: Following completion of construction activities, expected October 15, 2010.
AWPF Reimbursable Cost: $10,311.00 (Includes 5% administrative costs)
Matching Cost: $1,070

Task 7. Implement Education and Outreach Plan
Task Description: As this is a project which deals with a common problem throughout Arizona, the results will be shared with the local land management agencies, including the Apache Sitgreaves and Coronado Forests, the Bureau of Land Management, the municipalities and road maintenance organizations in Graham and Greenlee Counties, and other watershed groups throughout the state. We will also endeavor to cover the project in the local newspaper highlighting the partnerships with local land owners and federal agencies in meeting project objectives. A similar article will be placed in monthly newsletters provide by the Gila Watershed Partnership and the Upper Eagle Creek Watershed Association, and a brief power point presentation provided at a monthly meeting of the Gila Watershed group. Partners (Forest Service, Upper Eagle Creek Association, Gila Watershed Partnership) will involve Eastern Arizona College Educators and students in pre and post sampling of water quality attributes and macro-invertebrates, as well as documentation of long-term changes in riparian vegetation recovery and development through sampling and photo-points.
Task Purpose/ Objective: To educate the local communities, road maintenance organizations, and decision makers in the effectiveness of techniques and principles that make this project successful.
Deliverable Description: (1) copies of articles for newspapers, (2) PDF copies of newsletters with an article, (3) a power point presentation, (4) a narrative report summarizing education and outreach activities and contacts, and (5) a CD including all educational materials (1)-(4).
Deliverable Due Date: (1) Prior to construction, expect April, 2010; (2) Newsletter articles once published after construction is complete, expect August 2010; (3) power point presentation produced and presented after summer growth complete, expect by October 1, 2010; (4) narrative summary of E&O activities, expect November 1, 2010; (5) CD with all educational materials, articles, summary, power point, photos, etc, November 1, 2010
AWPF Reimbursable Cost: $4,148.66 (Includes 5% administrative costs)
Matching Cost: $4,605.00

Task 8. Final Report
Task Description: Includes a summary of the components of the project with discussion of the success and lessons learned.

The Grantee shall prepare and submit a comprehensive final report consistent with AWPF policies and guidelines, including a summary of all methodologies used, outcome of all tasks, analysis of all project and monitoring data, suggestions for any further changes needed in the project, and an evaluation of the projects success measured against the objectives.
Task Purpose/Objective: To document the project's effectiveness at meeting objectives, including resource objectives, budgetary summary, and education and outreach activities.
Deliverable description: Interim Reports - Summary of methodologies used, outcome of tasks, copies of invoices and photos. The final report will summarize all methodologies used, outcome of all tasks, summarize and analyze project data & monitoring data, suggest any further changes needed in the project and evaluate project success measured against the objective, copies of invoices and photos.

Deliverable Due Date: December 15, 2010
AWPF Reimbursable Cost: $7,443.77 (Includes 5% administrative costs)
Matching Cost: $600.00

EAGLE CREEK RIPARIAN RESTORATION AT FILLEMAN CROSSING
DETAILED BUDGET BREAKDOWN

Task 1				
Permits, Authorizations, Agreements - includes 404 and 401 permits, land owner agreements, arch survey	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Greenlee County Engineer	40	hrs	$ 85.00	$ 3,400.00
Gila Watershed Coordinator	40	hrs	$ 65.00	$ 2,600.00
Specialist Contractor (biologist)	80	hrs	$ 65.00	$ 5,200.00
Subtotal				**$ 11,200.00**
Other Direct Costs				
Sub-Contractor Agreements	30	pages	$ 0.15	$ 4.50
SHPO Clearance (incl section 7 consultation)	100	pages	$ 0.15	$ 15.00
ACOE 404 & ADEQ 401 Permits	200	pages	$ 0.15	$ 30.00
Control & Tenure of Land Documents	50	pages	$ 0.15	$ 7.50
Pollution Prevention Plan	40	pages	$ 0.15	$ 6.00
Postage	12	mailings	$ 4.05	$ 48.60
Subtotal				**$ 111.60**
Task Subtotal				**$ 11,311.60**
Administration Costs (5%)				**$ 565.58**
Task Total				**$ 11,877.18**

Task 2				
Develop Project Work Plan (Planning and design for Monitoring Plan, Materials Development Plan, Road Relocation & Hardening Plan, Revegetation & Rehabilitation Plan, Education & Outreach Plan)	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Greenlee County Engineer	40	hrs	$ 85.00	$ 3,400.00
Gila Watershed Coordinator	60	hrs	$ 65.00	$ 3,900.00
Subtotal				**$ 7,300.00**
Other Direct Costs				
Printing	1200	pages	$ 0.15	$ 180.00
Postage	24	mailings	$ 5.00	$ 120.00
Subtotal				**$ 300.00**
Task Subtotal				**$ 7,600.00**
Administration Costs (5%)				**$ 380.00**
Task Total				**$ 7,980.00**

Task 3				
Implement Monitoring Plan	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Monitoring Specialist - EAC Professor/Students	80	hrs	$ 65.00	$ 5,200.00
Gila Watershed Coordinator	40	hrs	$ 65.00	$ 2,600.00
Subtotal				**$ 7,800.00**
Other Direct Costs				
Baseline Monitoring Report	200	pages	$ 0.15	$ 30.00
Monitoring Report	200	pages	$ 0.15	$ 30.00
CDs	6	ea	$ 7.80	$ 46.80
Postage	24	mailings	$ 4.05	$ 97.20
Subtotal				**$ 204.00**
Task Subtotal				**$ 8,004.00**
Administration Costs (5%)				**$ 400.20**
Task Total				**$ 8,404.20**

Task 4				
Implement Materials Development Plan	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Greenlee County Engineer	8	hrs	$ 85.00	$ 680.00
Gila Watershed Coordinator	16	hrs	$ 65.00	$ 1,040.00
Subtotal				**$ 1,720.00**
Other Direct Costs				
Equipment & Contracts				
Blasting Contract (Partial - remainder is match)	1	ea	$ 9,000.00	$ 9,000.00
Loader 950	60	hrs	$ 125.00	$ 7,500.00
Dozer D-7	40	hrs	$ 150.00	$ 6,000.00
Transport	16	hrs	$ 140.00	$ 2,240.00
Subtotal				**$ 24,740.00**
Task Subtotal				**$ 26,460.00**
Administration Costs (5%)				**$ 1,323.00**
Task Total				**$ 27,783.00**

Task 5				
Implement Road Relocation & Hardening Plan	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Greenlee County Engineer	16	hrs	$ 85.00	$ 1,360.00
Gila Watershed Coordinator	20	hrs	$ 65.00	$ 1,300.00
Contract Roads Engineer	20	day	$ 300.00	$ 6,000.00
Subtotal				**$ 8,660.00**
Other Direct Costs				
Initial Construction Report	300	pages	$ 0.15	$ 45.00
Final Construction Report	300	pages	$ 0.15	$ 45.00
Binders	6	ea	$ 4.95	$ 29.70
Postage	12	mailings	$ 4.50	$ 54.00
Subtotal				**$ 173.70**
Capital Outlay & Equipment				
2.5 CY Hydraulic Excavator ($160/hr + $45/hr labor = $205/ hr, $3,280/day)	10	days	$ 3,280.00	$ 32,800.00
10 CY Dump Truck ($75/hr + $45/hr operator = $115/hr, $1150/day)	12	days	$ 1,150.00	$ 13,800.00
20 CY End Dump ($125/hr+ $45/hr. operator= $170/hr, $1700/day	10	days	$ 1,700.00	$ 17,000.00
Transport for Excavator and Loader	40	hrs	$ 150.00	$ 6,000.00
Vibratory roller ($65/hr + $45/hr operator = $110/hr	60	hrs	$ 110.00	$ 6,600.00
Subtotal				**$ 76,200.00**
Task Subtotal				**$ 85,033.70**
Administration Costs (5%)				**$ 4,251.69**
Task Total				**$ 89,285.39**

Task 6				
Implement Revegetation & Rehabilitation Plan	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Greenlee County Sherif Deputy	4	day	$ 250.00	$ 1,000.00
Detention Enrolees	16	day	$ 25.00	$ 400.00
Subtotal				**$ 1,400.00**
Equipment				
Tractor with disc/harrow + operator	16	hrs	$ 75.00	$ 1,200.00
PU with Trailer (Transport tractor)	8	hrs	$ 65.00	$ 520.00
Subtotal				**$ 1,720.00**
Material & Supplies				
Straw waddles and silt fencing/stakes	10	roll	$ 250.00	$ 2,500.00
Certified weed free straw	2	tons	$ 300.00	$ 600.00
Certified weed free seeding mix	300	lbs	$ 12.00	$ 3,600.00
Subtotal				**$ 6,700.00**
Task Subtotal				**$ 9,820.00**
Administration Costs (5%)				**$ 491.00**
Task Total				**$ 10,311.00**

Task 7				
Implement Education & Outreach Plan	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Gila Watershed Coordinator	40	hrs	$ 65.00	$ 2,600.00
Monitoring Specialist	16	hrs	$ 65.00	$ 1,040.00
Subtotal				**$ 3,640.00**
Other Direct Costs				
Printing	1000	pages	$ 0.15	$ 150.00
Mailings	24	ea	$ 4.95	$ 118.80
Education and Outreach Report	120	pages	$ 0.15	$ 18.00
Postage	6	mailings	$ 4.05	$ 24.30
Subtotal				**$ 311.10**
Task Subtotal				**$ 3,951.10**
Administration Costs (5%)				**$ 197.56**
Task Total				**$ 4,148.66**

Task 8				
Final Project Report	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Gila Watershed Coordinator	80	hrs	$ 65.00	$ 5,200.00
County Engineer	20	hrs	$ 85.00	$ 1,700.00
Subtotal				**$ 6,900.00**
Other Direct Costs				
Final Report	600	pages	$ 0.15	$ 90.00
Postage	6	mailings	$ 4.05	$ 24.30
CDs	10	ea	$ 7.50	$ 75.00
Subtotal				**$ 189.30**
Task Subtotal				**$ 7,089.30**
Administration Costs (5%)				**$ 354.47**
Task Total				**$ 7,443.77**

Total Requested AWPF	**$ 167,233.19**

DETAILED MATCHING BREAKDOWN

Task 1				
Permits, Authorizations, Agreements - includes 404 and 401 permits, land owner agreements, arch survey	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
USFS Contract Fisheries Biologist, Hydrologist, Roads Engineer	24	days	$ 1,000.00	$ 24,000.00
USFS District Biologist/NEPA Team Leader GS 11	10	days	$ 250.00	$ 2,500.00
USFS District Ranger GS13	10	days	$ 300.00	$ 3,000.00
USFS Fisheries Technician GS7	5	days	$ 165.00	$ 825.00
USFS District GIS Specialist GS9	2	days	$ 200.00	$ 400.00
Greenlee County Roads Supervisor	5	days	$ 200.00	$ 1,000.00
Subtotal				**$ 31,725.00**
Task Total				**$ 31,725.00**

Task 2				
Develop Project Work Plan	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
Greenlee County Engineer	20	hrs	$ 85.00	$ 1,700.00
USFS District Ranger	2	day	$ 300.00	$ 600.00
USFS Ranger	0.5	day	$ 250.00	$ 125.00
USFS Roads Planner	1.5	day	$ 300.00	$ 450.00
USFS Hydrologist	2.5	day	$ 250.00	$ 625.00
Subtotal				$ 3,500.00
Task Total				**$ 3,500.00**

Task 3				
Develop & Implement Monitoring Plan	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
USFS Range Management Specialist	3	days	$ 185.00	$ 555.00
USFS District Ranger	3	days	$ 300.00	$ 900.00
USFS District Biologist	2	days	$ 185.00	$ 370.00
USFS Forest Riparian Specialist	1	days	$ 225.00	$ 225.00
Subtotal				**$ 2,050.00**
Task Total				**$ 2,050.00**

Task 4				
Materials Development (Pit plan development & approval by county & FS, creation of raw matls. Using trimmer, blasting, dozer, loader, screening of mtl using county equip)	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
USFS District Ranger	3	days	$ 300.00	$ 900.00
USFS District Recreation Lands Staff	3	days	$ 185.00	$ 555.00
Land Owner	1	days	$ 200.00	$ 200.00
County Roads Personnel	4	days	$ 185.00	$ 740.00
Blasting Contract (Partial - USFW Partners cash match)	1	ea	$ 1,000.00	$ 1,000.00
Subtotal				**$ 3,395.00**
Other Direct Costs				
Equipment & Contracts				
Rock Trimmer (from Coronado FS Funds)	5	days	$ 1,000.00	$ 5,000.00
Loader 950 (County)	32	days	$ 125.00	$ 4,000.00
County Swamper Pickup	4	days	$ 95.00	$ 380.00
Subtotal				**$ 9,380.00**
Materials				
Raw Pit Materials	2500	tons	$ 14.00	$ 35,000.00
Subtotal				**$ 35,000.00**
Task Total				**$ 47,775.00**

Task 5				
Road Relocation & Hardening	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
USFS District Ranger	10	day	$ 300.00	$ 3,000.00
USFS District Recreation Lands Staff	3	day	$ 185.00	$ 555.00
Land Owner	4	day	$ 200.00	$ 800.00
County Roads Personnel	6	day	$ 185.00	$ 1,110.00
Subtotal				**$ 5,465.00**
Other Direct Costs				
Equipment & Contracts				
Loader 950 (County)	32	hrs	$ 125.00	$ 4,000.00
County Swamper Pickup	4	days	$ 95.00	$ 380.00
Vibratory Roller (8ft.) with operator	40	hrs	$ 200.00	$ 8,000.00
3 CY Loader ($75/hr + $45/hr operator = $120/hr, $1200/day) USFW cash match	20	days	$ 1,200.00	$ 24,000.00
Subtotal				**$ 36,380.00**
Materials/Supplies				
Geo-Textile	2	rolls	$ 450.00	$ 900.00
Subtotal				**$ 900.00**
Task Total				**$ 42,745.00**

Task 6				
Revegetation & Rehabilitation of Affected Lands	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
USFS District Ranger	1	days	$ 300.00	$ 300.00
USFS District Recreation Lands Staff	2	days	$ 185.00	$ 370.00
Land Owner	2	days	$ 200.00	$ 400.00
Subtotal				**$ 1,070.00**
Task Total				**$ 1,070.00**

Task 7				
Education & Outreach	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
USFS District Ranger	4	days	$ 300.00	$ 1,200.00
USFS District Range Management Specialist	2	days	$ 200.00	$ 400.00
USFS District Biologist	2		$ 200.00	$ 400.00
USFS District Recreation Lands Staff	2	days	$ 185.00	$ 370.00
USFS District GIS Specialist	1	days	$ 185.00	$ 185.00
Land Owner	2	days	$ 200.00	$ 400.00
Upper Eagle Watershed Association	10	days	$ 165.00	$ 1,650.00
Subtotal				**$ 4,605.00**
Task Total				**$ 4,605.00**

Task 8				
Final Project Report	**Amount**	**Unit**	**Cost per Unit**	**Total Cost**
Direct Labor				
USFS District Ranger	2	days	$ 300.00	$ 600.00
Subtotal				**$ 600.00**
Task Total				**$ 600.00**

Total Matching Funds	**$ 134,070.00**

Total AWPF and Matching Funds	**$ 301,303.19**

STATE HISTORIC PRESERVATION OFFICE
Review Form

In accordance with the State Historic Preservation Act (SHPO), A.R.S. 41-861 *et seq*, effective July 24, 1982, each State agency must consider the potential of activities or projects to impact significant cultural resources. Also, each State agency is required to consult with the State Historic Preservation Officer with regard to those activities or projects that may impact cultural resources. Therefore, it is understood that **recipients of state funds are required to comply with this law** throughout the project period. All projects that affect the ground-surface that are funded by AWPF require SHPO clearance, **including those on private and federal lands.**

The State Historic Preservation Office (SHPO) must review each grant application recommended for funding in order to determine the effect, if any, a proposed project may have on archaeological or cultural resources. To assist the SHPO in this review, the following information MUST be submitted with each application for funding assistance:

- A completed copy of this form, and
- A United States Geological Survey (USGS) 7.5 minute map
- A copy of the cultural resources survey report if a survey of the property has been conducted, and
- A copy of any comments of the land managing agency/landowner (i.e., state, federal, county, municipal) on potential impacts of the project on historic properties.
  NOTE: If a federal agency is involved, the agency must consult with SHPO pursuant to the National Historic Preservation Act (NHPA); a state agency must consult with SHPO pursuant to the State Historic Preservation Act (SHPA),
  OR
- A copy of SHPO comments if the survey report has already been reviewed by SHPO.

Please answer the following questions:

1. Grant Program: AWPF

2. Project Title: Eagle Creek Riparian Restoration at Filleman Crossing

3. Applicant Name and Address: Harold Filleman

4. Current Land Owner/Manager(s): Harold Filleman (USFS grazing permit holder)

5. Project Location, including Township, Range, Section: T1N, R28E, S19

6. Total Project Area in Acres (or total miles if trail): 1/2 acre

7. Does the proposed project have the potential to disturb the surface and/or subsurface of the ground?
   ☒ YES ☐ NO

8. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected: Road Crossing on Upper Eagle Creek

9. Describe the condition of the current ground surface within the entire project boundary area (for example, is the ground in a natural undisturbed condition, or has it been bladed, paved, graded, etc.). Estimate horizontal and vertical extent of existing disturbance. Also, attach photographs of project area to

document condition: The area is a steam crossing. The surrounding area has been disturbed periodically from flood events.

10. Are there any known prehistoric and/or historic archaeological sites in or near the project area? ☐ YES ☒ NO

11. Has the project area been previously surveyed for cultural resources by a qualified archaeologist? ☐ YES ☐ NO ☒ UNKOWN

    If YES, submit a copy of the survey report. Please attach any comments on the survey report made by the managing agency and/or SHPO

12. Are there any buildings or structures (including mines, bridges, dams, canals, etc.), which are 50-years or older in or adjacent to the project area? ☐ YES ☒ NO

    If YES, complete an Arizona Historic Property Inventory Form for each building or structure, attach it to this form and submit it with your application.

13. Is your project area within or near a historic district? ☐ YES ☒ NO

    If YES, name of the district:

Please sign on the line below certifying all information provided for this application is accurate to the best of your knowledge.

X Harold R. Filleman 6/5/08 Harold R. Filleman

Applicant Signature /Date Applicant Printed Name

FOR SHPO USE ONLY
SHPO Finding: ☐ Funding this project will not affect historic properties. ☐ Survey necessary – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*) ☐ Cultural resources present – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)
SHPO Comments
For State Historic Preservation Office: Date:

STATE OF ARIZONA
HISTORIC PROPERTY INVENTORY FORM

Please type or print clearly. Fill out each applicable space accurately and with as much information as is known about the property.

PROPERTY IDENTIFICATION

For properties identified through survey: Site No. _____ Survey Area: _____

Historic Names (*enter the name(s), if any that best reflect the property's historic importance*): _____

Address: Filleman Crossing

City or Town: Upper Eagle Creek ☐ Vicinity County: Greenlee Tax Parcel No.: _____

Township: 1N Range: 28E Section: 19 Quarters: _____ Acreage: 1/2 acre

Block: _____ Lot(s): _____ Plat (Addition): _____ Year of plat (addition): _____

UTM Reference – Zone: _____ Easting: _____ Northing: _____

USGS 7.5' quadrangle map: Robinson Mesa

ARCHITECT: _____ ☐ not determined ☐ known Source: _____

BUILDER: _____ ☐ not determined ☐ known Source: _____

CONSTRUCTION DATE: _____ ☐ known ☐ estimated Source: _____

STRUCTURAL CONDITION

☐ Good (*well maintained; no serious problems apparent*)
☐ Fair (*some problems apparent*) Describe: _____
☐ Poor (*major problems; imminent threat*) Describe: _____
☐ Ruin/Uninhabitable

USES/FUNCTIONS

Describe how the property has been used over time, beginning with the original use: _____

Sources: _____

PHOTO INFORMATION

Date of photo: _____
View Direction (looking towards): _____

Attach a recent photograph of property in this space.
Additional photographs may be appended.

SIGNIFICANCE

To be eligible for the National Register, a property must represent an important part of the history or architecture of an area. The significance of a property is evaluated within its historic context, which are those patterns, themes, or trends in history by which a property occurred or gained importance. Describe the historic and architectural contexts of the property that may make it worthy of preservation.

A. HISTORIC EVENTS/TRENDS – *Describe any historic events/trends associated with the property:* _____

B. PERSONS – *List and describe persons with an important association with the building:* _____

C. ARCHITECTURE – Style: _____ ☐ no style

Stories: _____ ☐ Basement Roof Form: _____

Describe other character-defining features of its massing, size and scale: _____

INTEGRITY

To be eligible for the National Register, a property must have integrity (i.e. it must be able to visually convey its importance). The outline below lists some important aspects of integrity. Fill in the blanks with as detailed a description of the property as possible.

Location - ☐ Original Site ☐ Moved: Date: _____ Original Site: _____

DESIGN

Describe alterations from the original design, including dates: _____

MATERIALS

Describe the materials used in the following elements of the property:

Walls (structure): _____

Walls (sheathing): _____

Windows: _____

Roof: _____

Foundation: _____

SETTING

Describe the natural and/or built environment around the property: _____

How has the environment changed since the property was constructed? _____

WORKMANSHIP

Describe the distinctive elements, if any, of craftsmanship or method of construction: _____

NATIONAL REGISTER STATUS (*if listed, check the appropriate box*)

☐ Individually Listed; ☐ Contributor; ☐ Non-contributor to _____ Historic District

Date Listed: _____ ☐ Determined eligible by Keeper of National Register (date: _____)

RECOMMENDATIONS ON NATIONAL REGISTER ELIGIBILITY (opinion of SHPO staff or survey consultant)

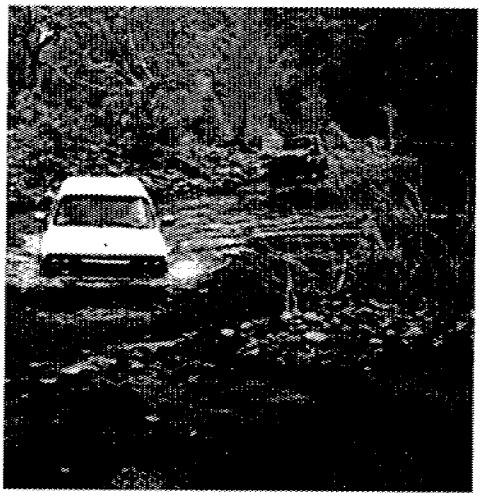
Property ☐ is ☐ is not eligible individually.

Property ☐ is ☐ is not eligible as a contributor to a listed or potential historic district.

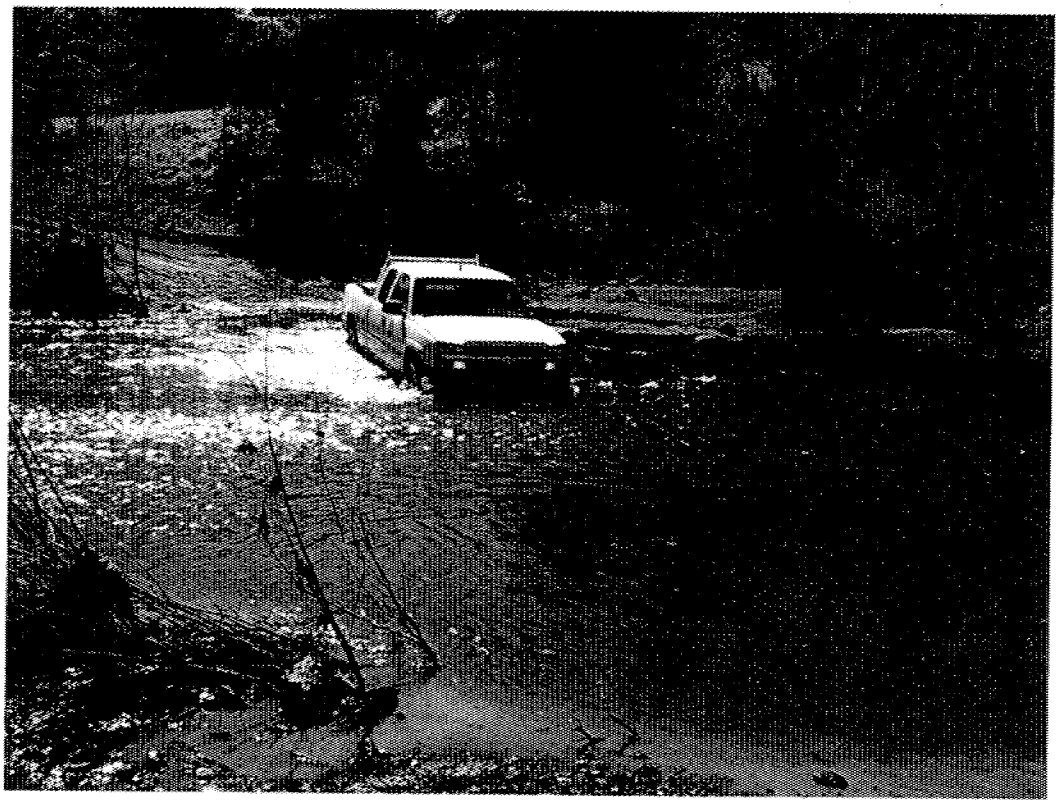
☐ More information needed to evaluate.

If not considered eligible, state reason: _____

Project Site Photographs



Filleman Crossing Before – Vehicle had to travel 200 yards through the creek, and climb a step bank. Note damaged bank.



Project Timeline:

Eagle Creek Ripararian Restoration at Filleman Crossing																
Timeline																
TASK		2009				2010				2011						
1	Permits and Clearances															
2	Work Plan															
3	Monitoring Plan															
4	Material Development															
5	Road Relocation & Hardening															
6	Revegetation															
7	Education & Outreach															
8	Final Report															

Supplemental Information

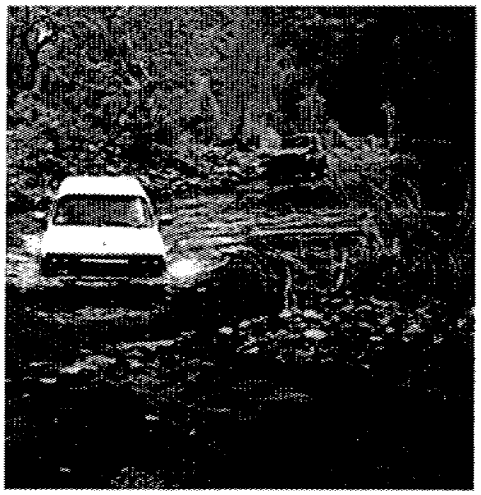
Key Personnel

Frank Hayes, will be acting as site supervisor for the project, and will be writing the implementation plan for the project. Mr. Hayes is the District Ranger for the Apache Sitgreaves National Forest. Mr. Hayes has been involved in numerous projects and programs that have benefited the watershed and its important riparian corridors. Mr. Hayes, and his staff have collaborated with the partnership on many grant projects and programs.

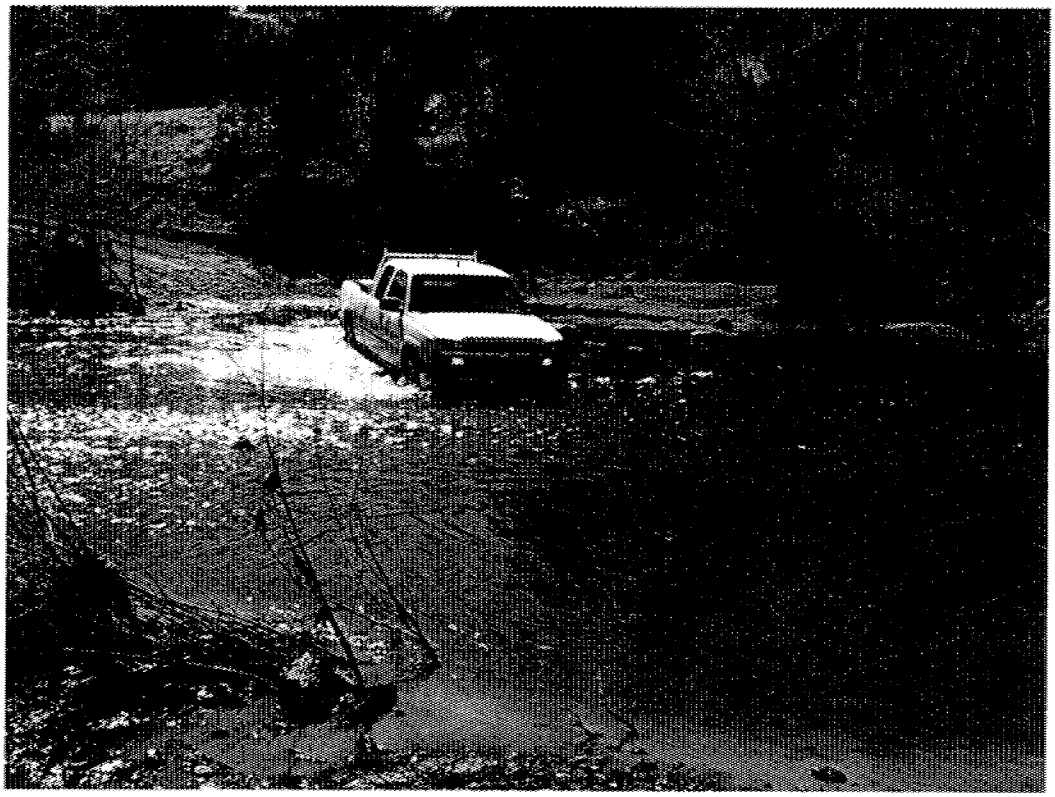
Phil Ronnerud, P.E., Greenlee County Engineer, a registered professional civil engineer, will be assisting with site supervision and providing oversight for the project. After obtaining a bachelor's degree in civil engineering from Northern Arizona University, Mr. Ronnerud was employed by the U.S. Navy as a civil engineer for four years, then worked for several engineering firms in the Phoenix area until 1990 when he was hired by Greenlee County, where he is employed as the County Engineer. Mr. Ronnerud has planned, designed and supervised many major construction projects for the county, as well as currently supervising watershed improvement restoration and cleanup projects and programs.

Jan Holder, the Program Manager for the Gila Watershed Partnership, will be acting as project coordinator. She will be administering the grant, and developing and implementing the education and outreach plan for the project. Jan has over 20 years of experience in marketing with numerous major national companies, and eight years of experience in solving environmental challenges throughout the Upper Gila Watershed. The Gila Watershed Partnership is the oldest watershed group in Arizona, and acts as a focus for environmental community outreach and education and water planning efforts for both Graham and Greenlee counties.

Project Site Photographs



Filleman Crossing Before – Vehicle had to travel 200 yards through the creek, and climb a step bank. Note damaged bank.

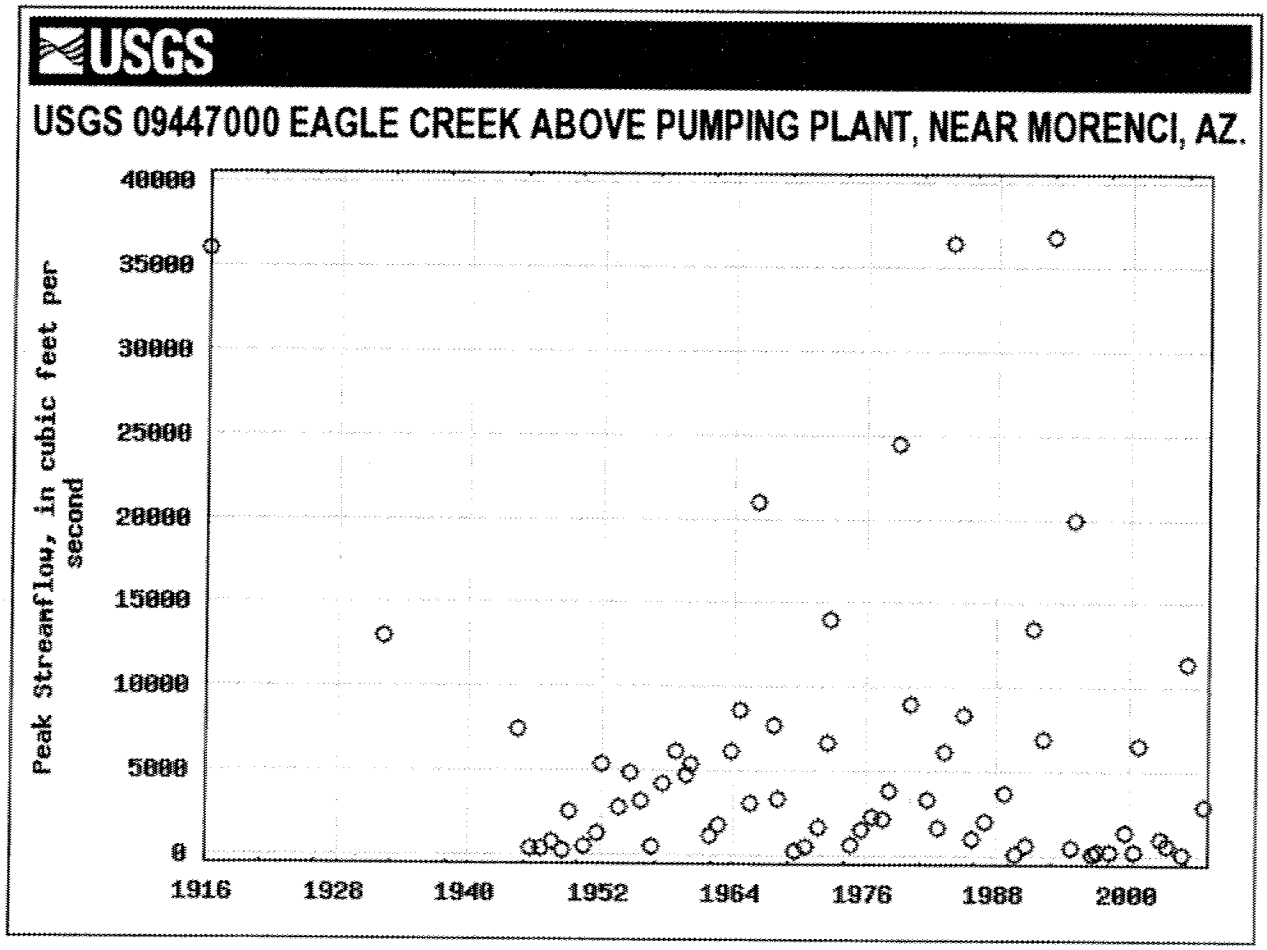


Description of Monitoring/Sampling Plans –

Previous Monitoring/Sampling Plans
According to the Arizona Department of Environmental Quality, Total Maximum Daily load studies in the Upper Gila Watershed are underway. However, currently, only the Blue River, The Gila River and Luna Lake are currently being tested. Attached is a summary of the status of TMDL studies in the Upper Gila Watershed.

Eagle Creek Roads Assessment An assessment of the background of the Eagle Creek Road crossing is attached.

USGS Peak Flow Data
Data from the USGS monitoring site was used to determine the optimum configuration for the road restoration to ensure that the roadway is stable and sustainable.



Status of TMDLs in the Upper Gila Watershed

AZ	HASSAYAMPA RIVER AB BLIND CREEK	CADMIUM	JAN-01-2002	EPA APPROVED	UNLISTED BUT IMPAIRED	None Reported	1
AZ	HASSAYAMPA RIVER COPPER	COPPER	JAN-01-2002	EPA APPROVED	COPPER	1998, 1996	1
AZ	HASSAYAMPA RIVER ZINC	ZINC	JAN-01-2002	EPA APPROVED	UNLISTED BUT IMPAIRED	None Reported	1
AZ	LITTLE COLORADO RIVER NUTRIOSO CK TO CARNERO CK	TURBIDITY	JAN-01-2002	EPA APPROVED	TURBIDITY	1998, 1996	1
AZ	LITTLE COLORADO RIVER WATER CYN TO NUTRIOSO CK	TURBIDITY	JAN-01-2002	EPA APPROVED	TURBIDITY	1998	1
AZ	VERDE RIVER (SYCAMORE CREEK) TURBIDITY/SEDIMENT	TURBIDITY	JAN-01-2002	EPA APPROVED	TURBIDITY	1998, 1996	1
AZ	VERDE RIVER AB WEST CLEAR CK	TURBIDITY	JAN-01-2002	EPA APPROVED	UNLISTED BUT IMPAIRED	None Reported	1
AZ	VERDE RIVER ABOVE RAILROAD DRAW	TURBIDITY	JAN-01-2002	EPA APPROVED	UNLISTED BUT IMPAIRED	None Reported	1

EPA's 2002 REPORT ON APPROVED TMDLS FOR THE STATE OF ARIZONA – note that nothing is approved for the Upper Gila Watershed

The following is copied from the ADEQ "Arizona's 2007 Nonpoint Source Annual Report Nonpoint Source Program - July 1, 2006 to June 30, 2007"

Goal: Develop TMDLs for 303(d) listed waterbodies.
Milestone & Progress Summary Project or Program Completion
Progress Summary –
The Turkey Creek Copper and Lead TMDLs were submitted to and approved by USEPA Region IX in October 2006. These were the only TMDLs approved by Region IX in FY07. Six other TMDLs are near completion, including the Alamo Lake and Lake Mary Regional mercury TMDLs. These mercury TMDLs have been delayed due to two main issues; adoption of the Implementation Procedures for the Fish Consumption Advisory Program and determining the watershed natural background mercury concentrations. Additional soil sampling is planned on both projects so that the draft TMDLs can be released for public comment and submitted for approval once the implementation procedures have been adopted.

For Pinto Creek, a site specific standard (SSS) for dissolved copper at 42µg/L is being proposed and is hardness independent. The SSS is included in the Triennial Review of Water Quality Standards rules package and final submittal of the TMDL can not occur until the rules are adopted.

Sampling to determine the Mule Gulch SSS has been delayed due to low rainfall amounts over the past year; however, automated equipment has been deployed throughout the watershed in anticipation of the summer monsoon season. Additional automated equipment has also been deployed along Queen Creek to fill data gaps needed for hydrologic modeling efforts to move forward.

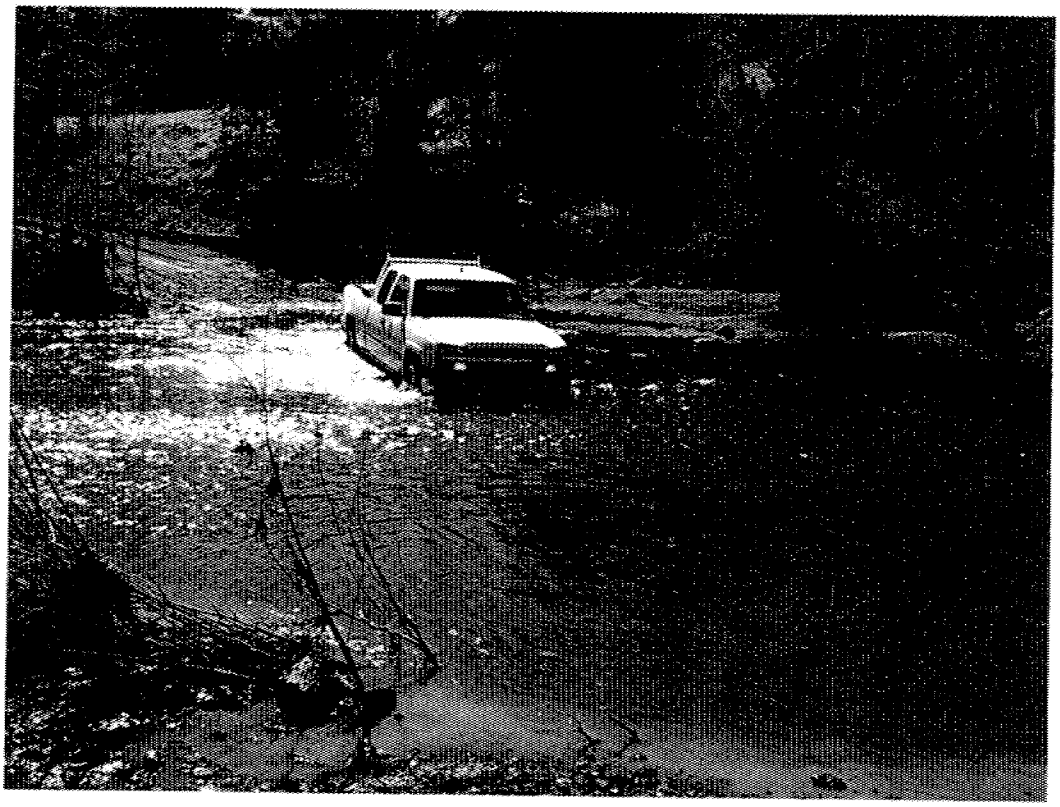
Significant progress has been made on the upper Gila River and Parker Canyon Lake TMDL projects. Sampling summer storm runoff will complete the Parker Canyon Lake data needs with sampling along the upper Gila continuing through the fall. New studies include Watson, Lyman, and Crescent lakes, East Verde River, and the lower San Pedro River.

Hold public meetings to involve local and affected stakeholders.
Progress Summary –
Stakeholder meetings were held during the last year for Pinto Creek, Queen Creek, and the upper Gila River.

Receive and evaluate comments.

Progress Summary –
ADEQ received and addressed comments for the Alamo Lake and Turkey Creek TMDLs.

Background of Eagle Creek Road Crossings
January 2008



Prepared by the US Forest Serrvice Apache Sitgreaves Clifton District

Shari Anderson, Detailed Fisheries Biotech

Lance Brown, District Wildlife Biologist

Forward by: Frank Hayes, District Ranger January 29, 2008

Eagle Creek watershed has long been recognized for priority management primarily because of the effect on Eagle Creek, occupied habitat for several native fish species, some of which are listed under the Endangered Species Act of 1973, as amended. The Apache-Sitgreaves National Forests Land and Resource Management Plan, as amended (Forest Plan), categorized Eagle Creek and at least one tributary (Chitty Creek) as a priority 1 stream for protection and recovery of habitats for federal and state listed aquatic species like Loach minnow, Gila chub, and Chiricahua leopard frog.

The District began aggressive action to improve and restore functionality and productivity to Eagle creek and associated tributaries in the early 1990's by implementing a series of actions or activities directed at addressing direct and indirect impacts that would have cumulative restoration benefits. This approach quickly noted that only about half of the entire watershed that affects the health of Eagle creek was encompassed within Forest boundaries, the remainder within the San Carlos Apache Indian reservation to the west. In addition, several small private land parcels totaling about two sections exist within the Eagle creek riparian corridor.

The following document is an attempt to summarize management activities that have been completed since at least 1993 on the Clifton District, influencing both the Eagle Creek watershed and Eagle Creek. The compilation of this document is an effort meant to identify the breadth and amount of commitment to help achieve the goals or restoration and recovery of the area and resources of issue. Management actions have been accomplished not only by Forest personnel, but grazing permittees, private land owners, and partnering agencies using Forest Service appropriated dollars and substantive outside funding and support.

Introduction

Eagle Creek is one of two primary watersheds on the Clifton Ranger District and is designated as a priority one stream with critical habitat occurring for both the Threatened loach minnow (*Tiaroga cobitis*) and Endangered Gila chub (*Gila intermedia*). The purpose of this document is to provide a brief history of the management activities that have occurred in the watershed to actively improve the conditions of Eagle Creek riparian corridor and provide background information for the Eagle Creek Crossings.

Eagle Creek is an 83 mile tributary to the Gila River located in Greenlee County, Arizona. Approximately, 31 miles (75%) of the perennial flows occur on non-National Forest land including tribal and private lands. It is an intermittent stream with surface water occurring only 2-3 months a year from Mud Springs Canyon to Big Dry Canyon on National Forest System lands.

Human influences to Eagle Creek have come primarily from livestock grazing, water development, mining, irrigated agriculture, roads, recreation, beaver removal, and flood control and channelization. Although the area is remote and sparsely settled, these human activities caused the worst damage 50 to 100 years ago to the watershed and the stream channel. Altered hydrologic conditions within the Eagle Creek watershed have resulted in a braided stream channel throughout much of the upper, non-canyon reach of Eagle Creek. Surface flow in substantial areas of the creek ceases during parts of the year, where anecdotal information from local residents indicates the stream may have flowed perennially throughout the year in the early 1900's. These changes were occurring as early as 1921, when Leopold noted that significant erosion of the floodplain was underway (Leopold 1921, 1946).

Existing Condition

Fish and Wildlife Species

Eagle Creek is designated as a priority one stream as described by the Apache-Sitgreaves Forest Management Plan. There is 17.7 miles of stream designated as critical habitat for the loach minnow beginning at the Phelps Dodge Diversion dam and extending upstream along Eagle Creek to the confluence with Dry Prong Creek. The Gila chub has 24.4 miles of designated critical habitat starting at the southern boundary of the Mud Springs Allotment and extending upstream on Eagle Creek to the confluence of Dry Prong and including all of East Eagle Creek which ends just south of Hwy. 191.

In addition to the two federally protected fish and Critical Habitat within Eagle Creek, the Endangered Southwestern willow flycatcher, Threatened Mexican spotted owl, Threatened Chiricahua leopard frog, and the Experimental Non-Essential population of the Mexican Gray Wolfs of the Blue Recovery Area occur or have potential to occur within the Eagle Creek Watershed. Other species occurring or potential to occur in the Eagle Creek Watershed include a variety of Forest Service Sensitive and Management

Indicator Species including: native fish, amphibians, reptiles, raptors, insects, neotropical songbirds, and plants.

Arizona State University completes annual fish surveys on Eagle Creek which began in the 1980's. They use a variety of sampling methods and sample all available habitat types including, riffles, pools, runs, and isolated backwater. The purpose is to sample the entire fish assemblage but focus on threatened spikedace and loach minnow habitats. As of 2006, eighteen species have been encountered including 8 native and 10 exotic species. Razorback sucker and spikedace were the only species not encountered that were previously known to exist in Eagle Creek. The last spikedace found in Eagle Creek was in 1989 during a survey conducted by University of Arizona.

The most recent ASU survey in 2006 reported non native red shiner *Cyprinella lutrensis* was the most abundant species overall (29% of total catch). 99% of red shiners were captured at one site, Bat Cave, in the lower section of Eagle Creek. Second abundant species was native speckled dace *Rhinichthys osculus* (14%), followed by desert sucker *Pantosteus clarki* (9%), green sunfish *Lepomis cyanellus* (8%), longfin dace *Agosia chrysogaster* (7%), and smallmouth bass *Micropterus dolomieu* and Gila chub *Gila intermedia* each comprising about 5%. Other species each comprised less than 5% of the total catch. Native species were only found upstream of the diversion dam where they comprised 95% of the total catch. Eleven species, 6 native and 5 non native were found above the dam and 6 non natives were found below. Other species encountered on this trip were natives, roundtail chub *G. robusta* and Sonora sucker *Catostomus insignis.* Non natives included western mosquitofish *Gambusia affinis,* common carp *Cyprinus carpio,* fathead minnow *Pimephales promelas*, channel catfish *Ictalurus punctatus,* yellow bullhead *Ameiurus natalis*, and rainbow trout *Oncorhynchus mykiss.* Neither loach minnow nor spikedace were found. The non native northern crayfish (*Orconectes virilis)* was abundant at all sites and may account for the general paucity of fish, particularly young of the year fish.

Previous ASU surveys also found native loach minnow (1996, 1997) and non native flathead catfish *Pylodictus olivaris* (1994), fathead minnow *Pimephales promelas* (1996, 1997, 1998, 2005) and a cutthroat trout *Onchorynchus clarki* (1994).

Arizona State University's 1997 trip report shows that since the re-discovery of loach minnow in Eagle Creek, they have only been located at the Smelley low water road crossing. They were first found there in 1994, in the riffle provided by the crossing. In the 1997 survey, the road crossing had been modified and no loach minnow were found there, but instead just a few specimens were captured 100 meters downstream. The construction at the crossing had modified the habitat to the point of displacing the loach minnow. The manner in which the road crossing is maintained in the future may have significant impacts on this loach minnow population (ASU, 1997).

The most recent fish survey was completed by the Arizona Game and Fish Department in the spring of 2007. AZGFD surveyed the upper one third of Eagle Creek, consisting mostly of Forest Service land and some private land. The lower end of the survey began

near the Sheep Wash confluence and it ended just upstream of Mud Springs Canyon. This survey only sampled high gradient riffle habitats, as they were focused on collecting loach minnow and spikedace for propagation. AZGFD reported 99.9% of captured species were natives. No loach minnow or spikedace were found. The most common species captured were speckled dace followed by desert sucker. Rainbow trout was the only non native fish species encountered.

Rainbow trout are the primary non native species in the upper portion of Eagle Creek. These fish were stocked on an annual basis by AZGFD up until 1993 for sport fishing purposes but still persist with naturally reproducing populations. After the capture of a cutthroat trout by ASU surveyors (1994), it is thought that cutthroat trout may have been introduced by way of AZGFD however there is no record of this.

Native species still form the majority of the fish community in Eagle Creek above the Phelps Dodge diversion dam, but nonnatives dominate below the dam. The long-term trend in the native/nonnative species balance is toward more nonnatives and less natives. However, the presence of the diversion dam has deterred the upstream movement of many nonnatives and available data are too limited to determine the present rate of the trend in upper Eagle Creek.

Stream surveys

A Water Resources Assessment for Eagle Creek was completed by the Forest Service in 1998. A reference reach (T3) was set up in the area below the Dry Prong confluence to above the Honeymoon Campground. Two other reaches were set up for comparison. The first reach (T1) occurred below the Willow Creek confluence to above the Sheep Wash confluence. The second reach (T2), occurred below Mud Springs Canyon confluence to above the Willow Creek confluence. The final assessment found T1 to have excessive amounts of sediment in the stream and eroding banks contributed by area roads, crop fields, and livestock. Temperatures were also a concern due to lack of vegetation cover and shading. It was also noted in the summary that there is a lack of large woody debris throughout Eagle Creek. At the turn of the century large down wood was cut into smaller pieces to prevent flooding events and were washed out during high flows. The result is no large wood available to withstand high flows and sort large sediment loads that are transported downstream.

A Level II stream survey was performed on Eagle Creek by Clifton Ranger District personnel during the summer of 2004 and a summary report completed in November 2007. The survey extended from the confluence of Willow Creek upstream 11.55 miles to Honeymoon Campground. Only stream sections on National Forest Land were surveyed along Eagle Creek.

The results of the stream survey did not reflect the disturbance the Watershed Resources Assessment described. A significant amount of the disturbance reported in the Watershed Resources Assessment occurs downstream of the Level II stream survey. The data show the stream to be within Standards and Guidelines as described in the Forest

Plan for the Apache Sitgreaves National Forest. There are less than 20% unstable banks (1% recorded) and the amounts of fine sediments are limited. The average temperature of 69.1 degrees F for the stream was well within the tolerable temperatures for all federally listed species present and no single temperature recorded exceeded the species maximum tolerance. The Standards and Guidelines require temperatures not to exceed 68 degrees Fahrenheit; however, it could be that this system has naturally warmer stream conditions.

It is unclear what the proper amount of wood should be; however, low numbers could decrease stream structure and complexity and reduce the number and volume of pools. The notes in the watershed assessment indicate that woody debris has been removed in the past by private landowners to reduce flooding and erosion on their lands. This practice was still occurring as recently as the late 1980's after the 1983 flood. Assuming these practices no longer take place and there is still potential for wood recruitment, the large woody debris numbers should be increasing over time. It would be important to note any changes to pool frequency or pool riffle ratio during future surveys.

Primary Constituent Elements are listed in the Federal Register's Final Rules for Loach Minnow and Gila Chub Designation of Critical Habitats and are located in Appendix A. Large woody debris in the stream is an important habitat factor for Gila chub. Gila chub need sufficient cover consisting of downed logs in the water channel, submerged aquatic vegetation, submerged large tree root wads, undercut banks with sufficient overhanging vegetation, large rocks and boulders with overhangs, a high degree of streambank stability, and a healthy, intact riparian vegetation community.

Loach minnow require swifter water velocities and need sufficient riffle habitats with cobble and gravel substrate. A balanced pool to riffle ratio is important to accommodate both species. Both species require stable bank conditions that limit the amounts of sediment input in the stream as well as habitat devoid of non native species.

For a complete discussion on the Stream Surveys, please refer to the 2007 Steam Survey Summary located at the Clifton Ranger District Office.

Riparian Conditions

The riparian vegetation on Eagle Creek includes Arizona sycamore (*Platanus wrightii*) and narrowleaf cottonwood (*Populus angustifolia*) with an understory of Arizona walnut (*Juglans major*),boxelder (*Acer negundo*), alder (*Alnus oblongifolia*), several willow species, and baccharis. Terrace vegetation along the streams includes juniper, pinyon, gray oak, desert ceanothus, and other species.

In the years 1998 and 1999, a Proper Functioning Condition assessment was performed for riparian condition in the upper Eagle Creek drainage. Results show, generally speaking, the drainage is functioning at risk with an upward trend. Timeframes associated with full recovery are estimated to be in excess of 50 to 100 years, in part dependent on riparian vegetation regrowth and incorporation of sufficient amounts of large woody

vegetation and coarse woody debris in the system. However, due to the apparently unstable flow regimes of some major tributaries, along with flow augmentation and removal through pumping, the potential configuration of a stable Eagle Creek system will be different from what it was, and may take centuries to equilibrate (USFS 2001b).

Direction by Law

NFMA - 1976

The National Forest Management Act of 1976 required the Secretary of Agriculture to develop guidelines for land management planning with the individual forest being the planning unit or area. The Act states that "Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." (36 C.F.R. § 219.19). A viable population is defined as "[a population] which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area." (§ 219.19). Therefore, management of viable populations is intended to be accomplished at the individual National Forest level (planning area).

Apache-Sitgreaves Forest Plan – 1987
Standards and Guidelines

Eagle Creek is a priority one stream as defined by the Apache-Sitgreaves Forest Plan. Standards and Guidelines state that all Priority 1 areas will be placed under proper management by 1992. Proper management means that systems are in place and activities are scheduled that will put unsatisfactory areas on the road to recovery.

Recovery activities such as fencing, vegetation projects, and special management prescriptions will be maintained until the affected area(s) are brought into satisfactory condition and as long thereafter as necessary to maintain the area(s) in satisfactory condition, or until they are replaced by more effective techniques.

Recreation use, including off-road vehicle use, will be prohibited or restricted and sites rehabilitated in areas in unsatisfactory condition, when recreation was a significant causative factor affecting condition

For Priority 1 and 2 Riparian Areas:

a) Aquatic resources:
    (1) Manage for and maintain at least 80 percent of near natural shade over water surfaces.
    (2) Manage for and maintain at least 80 percent of streambank total linear distance in stable condition.
    (3) Prevent siltation not to exceed 20 percent fines (<855mm) in riffle areas.
    (4) Maintain 80 percent of the spawning gravel surface free of inorganic sediment.

(5) Manage for stream temperatures not to exceed 68 degrees F, unless not technically feasible.
(6) Manage for and maintain at least a 80 Biotic Condition Index on all perennial streams.

In areas of unsatisfactory riparian condition where grazing has been determined to be a significant causative factor revised allotment management plans will:

a) Implement intensive management systems which limit grazing and provide adequate rest for riparian areas.
b) Reduce stocking to a level that will allow degraded areas to recover. or
c) Use site specific exclusion fencing

Endangered Species Act -1976

The Endangered Species Act (ESA) of 1976, as amended, directs each federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitat (Section 7). The ESA also directs each federal agency to confer or consult with the appropriate Secretary on any action, which is likely to jeopardize or affect the continued existence of any species or its habitat. Additionally Section 2(c)(1) of the ESA includes affirmative conservation direction, stating "that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes this act."

Clean Water Act Section 401 and 404

Section 401 of the Clean Water Act requires certification from the state where construction will contribute to any discharge into navigable waters. Section 404 of the Clean Water Act requires a permit from the U.S. Army Corps of Engineers for the discharge of dredged or fill material into navigable waters.

Section 404 Nationwide permits that could be obtained for the Eagle Creek Crossing maintenance and reroute would include the Maintenance permit and the Bank Stabilization permit. Descriptions of activities that fall under these permits are located in Appendix B.

Tribal Permits

One of the Eagle Creek low water crossings scheduled for maintenance is on the San Carlos Apache Reservation. This crossing will require section 401 and 404 certification obtained by the tribes through a separate application process than used by the Forest Service.

Range Management

Grazing by livestock has been the primary pervasive use of the Eagle Creek watershed for the past 150 years with substantial alteration of watershed vegetation, soil, erosion, and hydrologic characteristics (Leopold 1946, USFS 2001a-g). Livestock grazing within the watershed has been reduced from historic levels and the Forest Service and private landowners have been working cooperatively to improve the management of livestock in the riparian corridor of Eagle Creek since 1993. These cooperative efforts have facilitated an increase in riparian woody species composition and age class with significant improvement in watershed conditions.

Allotments within the Eagle Creek watershed include East Eagle, Mud Springs, Baseline-Horsesprings, Double Circle, Tule, and Dark Canyon. Critical Habitat for both loach minnow and Gila chub occur on Mudsprings and East Eagle allotments. Critical habitat for only loach minnow occurs on all the remaining allotments. In 1993 the Clifton Ranger District requested that permittees and private land holders to fence out the Eagle Creek riparian zone to come into compliance with the Standards and Guidelines of the Forest Plan for priority one riparian areas. As of 1995 fencing was in place to exclude Eagle Creek from these allotments.

Clifton Ranger District currently has an ongoing effort to update all allotment analysis and adjust the permitted number of livestock per allotment with the goal of continuing the recovery of Eagle Creek. Memorandums of Understanding (MOU's) have been in place since 1995 for reduced stocking of the Eagle Creek allotments. The permitted number of combined AUM's for these 6 allotments is 25,169 and the current stocking levels are at 13,146 AUM's. This is only 52% of the permitted number.

The Clifton Ranger District has followed up with administrative actions and impoundments when grazing permits were not followed by the permitees and the condition of the land was receiving resource damage. In 2002, an administrative action removed all cattle from the Mud Springs allotment when there was a violation of the grazing permit during drought conditions. Similar actions were taken in 2002 on the Double Circle allotment and in the early 90's on the Dark Canyon allotment. In 2001, 17 head of reservation cattle were impounded when they crossed down fencing and were grazing in the mid prong and west prong areas, degrading stream banks and riparian vegetation.

The East Eagle Allotment is in the headwaters of Eagle Creek and is an extremely important native fish stream with Critical Habitat for two fish species. While being managed under the resource protection MOU with the livestock permittee by reduced stocking rates, there have been recent improvements in range condition on the allotment with almost 90% of capacity acres rated in fair condition. Riparian fencing, development of offsite water, active cattle management on the allotment, and livestock exclusion immediately downstream on National Forest and private lands, has resulted in improvement in the regeneration of riparian areas. The Gust MOU has been in place

since 1995 for the specific purpose of riparian recovery in the East Eagle and Mudsprings Allotments.

The Upper Eagle Creek Watershed Association (UECWA) was formed in 2003. Board Members are permittees and ranchers who own property within the watershed. Other members include Federal, State and County employees, other watershed residents, recreational users, special interest groups, educators, and scientists with a stake in Upper and Lower Eagle Creek 5th code watersheds. The goals of the UECWA include improvement and preservation of the watershed and promotion of the perennial nature of Upper Eagle Creek as well as the protection, enhancement, and increased habitat for wildlife and domestic animals, especially in times of drought. The UECWA has been working to develop a watershed management plan to provide detailed information and direction to facilitate ongoing landscape scale cooperative efforts between the UECWA and its partners and cooperators for the purpose of benefiting the land and the people. The management plan will addresses the Environmental Protection Agency's (EPA) nine critical elements.

Hydrologic Condition

Water development and interbasin water transfers have altered the volume and timing of flow in the creek. In 1945, Phelps Dodge Corporation constructed a diversion from the Black River (Gila River basin) into Willow Creek, a tributary of middle Eagle Creek. This diversion augments flow in Eagle Creek below Willow Creek by about 27 percent (Minckley and Sommerfeld 1979). Current water levels have increased an undetermined amount due to increased scope of operations at the Phelps Dodge Corporation mine.

Aquatic Conditions

Also affecting the Eagle Creek watershed was the historic cutting of timber for mine construction and fuel. According to Olmstead (1919) "the watershed [of Eagle Creek] has been badly torn up for the past nine years, largely on account of changes in the ground cover conditions, due to extensive mining operations." Extensive harvest of wood from watersheds surrounding the Clifton/Morenci mines decimated both upland and riparian woodlands and its depletion made it necessary to bring additional wood for the mines from as far away as Wilcox (Bahre 1991). In addition, it is likely that some of the wood from the Eagle Creek watershed was moved down the creek in tie-drives (Coor 1992). To facilitate this on small streams without sufficient flow to carry logs, cut logs were stockpiled behind small trees on a slope near the stream and when flood flows rose, the small trees were knocked down with small charges of dynamite allowing the logs to roll into the flood waters and be carried downstream (B. Marks, Blue, Arizona, pers. com. 1994). Water transportation of logs is highly destructive of stream channels and fish habitat (Meehan 1991) with long-term consequences.

Changes in stream flow and hydrologic cycles have caused reduction in the presence of large riparian trees and loss of recruitment along Eagle Creek overall. In the past aquatic habitat diversity in Eagle Creek has been low with few pools and a dominant habitat of

shallow runs and riffles over unstable cobble-gravel-boulder substrate (Marsh *et al.* 1990, Arizona Game and Fish Department 1994, Knowles 1994). According to the recent Level II survey, described previously, there is an upward trend in habitat conditions with increases in pool frequency and more balanced pool riffle ratios since 1994.

Arizona Department of Environmental Quality completed a draft watershed assessment for the Upper Gila Watershed in 2007 which include water quality testing in Eagle Creek. Sampling periods were January through July of 2000 and August through November of 2005. Sampling sites were above Honeymoon Campground, above Sheep Wash, and below Gold Gulch. Samples were taken to evaluate a wide range of parameters including dissolved metals, nutrients, pH, oxygen, bacteria, suspended sediments, turbidity, and dissolved solids. No exceedances were detected at any of the sites.

In the past, Eagle Creek was recognized as having water quality issues. In 1992 ADEQ 305b report listed Eagle Creek as "Threatened" due to sediment from grazing and forest roads, and metals (geology). However, by 1994 ADEQ 305b report listed Eagle Creek as supporting full uses without any exceedences in any category.

Roads and Recreation Management

Road construction, reconstruction, and maintenance has resulted in substantial alterations in the hydrologic regime of Eagle Creek, and associated tributaries of East Eagle and Dry Prong above Honeymoon campground. Approximately 8 miles of the 22 miles of Forest Road 217 which connects Highway 191 to Honeymoon campground, follows closely along upper Eagle Creek to the campground destination, including 3 crossings (all on private or Tribal lands) and substantial amount of private lands.

Following floods of 1973 and 1984 significant reconstruction occurred on portions of the upper roadway in this 8 mile corridor of Eagle Creek. Travelways and roads above Honeymoon campground into perennial reaches of East Eagle and Dry Prong forks of upper Eagle Creek were historically dozier access created roads to ranch cabins or sawmill locations that required annual maintenance. Prior to 1991, both prongs had roadways that were traveled the entire length, but were closed to vehicle traffic following the 1993 winter flood events. Previous management of these travelways included both dozing open roadways and clearing/burning of large log jams. These practices were completed in both drainages following the flood of 1983, but have been discontinued since that time.

Clifton Ranger District, in cooperation with Greenlee County, has taken a proactive road maintenance approach along the 22 mile Forest Road 217 and especially in the 8 mile Eagle Creek corridor since about 1993. Maintenance improves access for Eagle Creek residents and reduces future reconstruction disturbance that creates excess siltation. Maintenance includes improved hardening of four Eagle Creek crossings, three on private land and one on reservation land. Hardening of the crossings both in the stream and the approaches to the stream is known to reduce siltation within critical habitat for loach minnow and Gila chub fish species.

Very limited maintenance has been performed on Forest Road 8369 (upper Eagle Creek above Honeymoon campground). Road 704, which splits off from 8369, was previously an old dozier route and was improved for vehicle travel to Maylay. A seasonal closure (Feb. 1st – June 30th) was implemented for both roads in February of 2000 to enhance riparian recovery. Also seasonally closed, is Forest Road 515 connecting Hwy. 191 to Forest Road 217 which contains the Sheep Wash wetland area. Past improvements including camping exclosures, riparian exclosures, log jam placement, and induced meandering along the 515 road have been constructed to protect this area from further disturbance.

There are three low water crossings in Eagle Creek along road 217 and one crossing on road 217P. Smelly, Filleman, and Eagle/Willow Creek crossings are located on private land and one crossing, Reservation Crossing is located on the San Carlos Apache Reservation. Frequent flood events require ongoing maintenance of these locations. Maintenance includes, hardening the crossings and approaches to reduce the amount of sediment input into the stream. Currently there is a proposed action for extensive work on two of the crossings. The Reservation Crossing will be rip-rapped in several locations along the bank and in the channel to re-create a natural meander and prevent erosion of the stream bank. The Filleman Crossing has been rerouted within the last year to eliminate a 200 foot in-stream travel route by making the crossing more perpendicular to the stream, improving habitat quality for federally listed fish and wildlife species.

In 2000, emergency repairs were made at Honeymoon Campground on Eagle Creek after a flood event in 1999 damaged bank protection structures. Two work sites were established. The Honeymoon site included stabilizing and replacing damaged gabions which provide structural support to Forest Road 217 at the campground. The 4-Drag work site included stabilizing and extending existing rock riprap that protects private lands associated with the 4-Drag headquarters and historic Honeymoon Ranger Station. The repairs at both sites stabilized the stream bank to prevent further erosion and siltation into Eagle Creek as well as protect the recreation site.

Restoration: Prescribed Fire and Thinning

The use of prescribed fire and mechanical thinning has been a key factor in the restoration goals of the Eagle Creek watershed. After decades of suppression, the reintroduction of fire to the system helps return the vegetation conditions to a more natural state by reducing the amount of woody fuel species such as junipers that have built up over the past 50 plus years. Reduction of these species creates more surface water availability in the watershed. Another goal of restoration is to reduce the potential for catastrophic fire that can burn over sensitive riparian corridors and have negative effects on native fish species.

The Federal Register's Final Rule of Gila Chub listing for endangered status and designation of critical habitat was published by the U.S. Fish and Wildlife Service in

2007. This document links catastrophic fires as a major threat to remaining populations of the Gila chub.

> "Wildfires pose a threat to these remaining extant populations. The frequency and intensity of wildfires in the southwestern United States has increased over the past 10 years due to drought conditions, historical wildfire suppression activities, and increased recreational activities (e.g., camping). Efforts are underway to restore natural fire regimes to forest and grass lands."
>
> "Fires in the southwest frequently occur during, or just prior to, the summer monsoon season. As a result, fires are often followed by rain that washes ash-laden debris into streams (Rinne 2004). It is usually such debris, rather than the fires themselves, that impact, and sometimes devastates fish populations (Rinne 2004), although direct effects from fire, including changes in temperature and water chemistry, can also cause fish mortality. Indirect effects of fire also include watershed alteration that can alter streamflow, water quality, riparian vegetation, and instream sediment loads, all of which can drastically alter habitat for the Gila chub. Fire suppression can cause adverse affects to Gila chub from vegetation removal and road building, using fish habitats as water sources for fire fighting, and using fire retardants that are often toxic to aquatic species (see U.S. Fish and Wildlife Service 2004b for a thorough review of the effects of fire on fishes, including Gila chub, in Arizona)."

The scenario described above; wildfire followed by monsoonal rains, occurred during the summer of 2007 in the Chitty Creek watershed with complete scouring of Chitty Creek. The Chitty Wildfire burned from June 30, 2007 to July 16, 2007 totaling 6,999 acres burned with a variety of fire intensities. Over 16% of the burned acreage in Chitty Creek Watershed was crown and high intensity fire while the entire Eagle Creek Watershed had 11% of the burned area described as crown and high intensity fire. Based upon fire intensity mapping and field observations, the primary causal factor for erosion and scouring of Chitty Creek was the Crown and High Intensity fire. Sediment and ash from the Chitty Creek Watershed was observed to move down the system, through East Eagle Creek and into Eagle Creek. It's unknown how far the effects of this debris flow reached.

Clifton Ranger District has been using prescribed fire and mechanical thinning in the Eagle Creek watershed since 1995. 19,371 acres have been treated using broadcast burn with 715 of those acres thinned prior to burning and many areas having multiple applications of fire. Treated areas include Sheep Wash (1995), East Eagle (1996, 1999), Mesa (1997), Pine Flat (1997), Mitchel Peak (1998), Hot Air (1999), Robinson Mesa (1999, 2000), and Chitty (2007). In the future the NO Bar, 4-Bar Mesa, and Mallet areas within the watershed are planned for prescribed fire projects with an ongoing effort to maintain a natural fire regime.

Conclusion

In conclusion, many activities have been initiated by the Forest Service, permittees, private land holders, and the UECWA to facilitate the improved conditions along Eagle Creek and the upland habitats that are closely linked with cause and effect to Eagle Creek water quality.

Improving and providing for long-term maintenance of the multitude of road crossings that traverse Eagle Creek using Best Management Practices, would further the goals of all parties to improve the water quality of Eagle Creek, reduce the need for continous maintenance within native fish Critical Habitat, and provide safe public access for the residents along Eagle Creek.

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U.S. Forest Service (USFS). 2001e. Allotment Summary Sheets for Dark Canyon Allotment.

U.S. Forest Service (USFS). 2001f. Allotment Summary Sheets for East Eagle.

U.S. Forest Service (USFS). 2001g. Biological Assessment and Evaluation In Regards to Tule Ongoing Grazing.

Appendix A

Primary Constituent Elements

Gila Chub

Primary constituent elements for Gila chub as described in the Federal Register's Final Rule for Endangered Species Listing and Critical Habitat Designation list woody debris as an important habitat factor. Gila chub are highly secretive animals, preferring quiet deeper waters, especially pools, or they remain near cover, including terrestrial vegetation, boulders, and fallen logs (Minckley 1973). Undercut banks created by overhanging terrestrial vegetation with dense roots growing into pool edges provide ideal cover for this species (Nelson 1993). A relatively intact riparian area, along with periodic flooding in a relatively natural pattern, is important in maintaining the stream conditions necessary for long-term conservation of the Gila chub.

In its habitats, the Gila chub was probably the most predatory fish and experienced little or no competition. The introduction of more aggressive and competitive nonnative fish has led to significant losses of Gila chub. Nonnative crayfish also appear to prey on and compete with Gila chub (Carpenter 2000, 2005).

(1) Perennial pools, areas of higher velocity between pools, and areas of shallow water among plants or eddies all found in headwaters, springs, and cienegas, generally of smaller tributaries;
(2) Water temperatures for spawning ranging from 17 to 24 °C (62.6 to 75.2 °F), and seasonally appropriate temperatures for all life stages (varying from approximately 10 °C to 30 °C).
(3) Water quality with reduced levels of contaminants, including excessive levels of sediments adverse to Gila chub health, and adequate levels of pH (*e.g.* ranging from 6.5 to 9.5), dissolved oxygen (*e.g.* ranging from 3.0 to 10.0) and conductivity (*e.g.* 100 to 1000 mmhos).
(4) Food base consisting of invertebrates (*e.g.* aquatic and terrestrial insects) and aquatic plants (*e.g.* diatoms and filamentous green algae);
(5) Sufficient cover consisting of downed logs in the water channel, submerged aquatic vegetation, submerged large tree root wads, undercut banks with sufficient overhanging vegetation, large rocks and boulders with overhangs, a high degree of streambank stability, and a healthy, intact riparian vegetation community;
(6) Habitat devoid of nonnative aquatic species detrimental to Gila chub or habitat in which detrimental nonnatives are kept at a level that allows Gila chub to continue to survive and reproduce; and
(7) Streams that maintain a natural flow pattern including periodic flooding.

Loach Minnow

1. Permanent, flowing water with no or minimal pollutant levels, including:

a. Living areas for adult loach minnow with moderate to swift flow velocities between 9.0 to 32.0 in/second (24 to 80 cm/second) in shallow water between approximately 1.0 to 30 inches (3 cm to 75 cm) in depth, with gravel, cobble, and rubble substrates;

b. Living areas for juvenile loach minnow with moderate to swift flow velocities between 1.0 and 34 in/second (3.0 and 85.0 cm/second) in shallow water between approximately 1.0 to 30 inches (3 cm to 75 cm) in depth with sand, gravel, cobble, and rubble substrates;

c. Living areas for larval loach minnow with slow to moderate velocities between 3.0 and 20.0 in/ second (9.0 to 50.0 cm/second) in shallow water with sand, gravel, and cobble substrates;

d. Spawning areas with slow to swift flow velocities in shallow water where cobble and rubble and the spaces between them are not filled in by fine dirt or sand; and

e. Water with dissolved oxygen levels greater than 3.5 cc/l and no or minimal pollutant levels for pollutants such as copper, arsenic, mercury, and cadmium; human and animal waste products; pesticides; suspended sediments; and gasoline or diesel fuels.

2. Sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness. Suitable levels of embeddedness are generally maintained by a natural, unregulated hydrograph that allows for periodic flooding or, if flows are modified or regulated, a hydrograph that allows for adequate river functions, such as flows capable of transporting sediments.

3. Streams that have:

a. Low gradients of less than approximately 2.5 percent;

b. Water temperatures in the approximate range of 35 to 82 °F (1.7 to 27.8 °C) (with additional natural daily and seasonal variation);

c. Pool, riffle, run, and backwater components; and

d. An abundant aquatic insect food base consisting of mayflies, true flies, black flies, caddisflies, stoneflies, and dragonflies.

4. Habitat devoid of nonnative aquatic species or habitat in which nonnative aquatic species are at levels that allows persistence of loach minnow.

5. Areas within perennial, interrupted stream courses that are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.

Appendix B

Nationwide Permits

Maintenance. (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris in the vicinity of and within existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) and the placement of new or additional riprap to protect the structure. The removal of sediment is limited to the minimum necessary to restore the waterway in the immediate vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend further than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an upland area unless otherwise specifically approved by the district engineer under separate authorization. The placement of riprap must be the minimum necessary to protect the structure or to ensure the safety of the structure. Any bank stabilization measures not directly associated with the structure will require a separate authorization from the district engineer.

(c) This NWP also authorizes temporary structures, fills, and work necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation or beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 27). Where maintenance dredging is proposed, the pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Sections 10 and 404)

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

Bank Stabilization. Bank stabilization activities necessary for erosion prevention, provided the activity meets all of the following criteria:

(a) No material is placed in excess of the minimum needed for erosion protection;
(b) The activity is no more than 500 feet in length along the bank, unless this criterion is waived in writing by the district engineer;
(c) The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark or the high tide line, unless this criterion is waived in writing by the district engineer;
(d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless this criterion is waived in writing by the district engineer;
(e) No material is of the type, or is placed in any location, or in any manner, to impair surface water flow into or out of any water of the United States;
(f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas); and,
(g) The activity is not a stream channelization activity.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges into special aquatic sites; (2) is in excess of 500 feet in length; or (3) will involve the discharge of greater than an average of one cubic yard per running foot along the bank below the plane of the ordinary high water mark or the high tide line. (See general condition 27.) (Sections 10 and 404)

EXHIBITS

Exhibit A - Project Plan

Exhibit B – Topographic map of project

Exhibit C – Aerial map of project

EXHIBIT A
Planned Work and Cost Estimate
Eagle Creek River Crossing Restoration

I. Project Information

Background.

The objective of this project is to assist in the recovery of Eagle Creek, and thus protect and enhance the aquatic and associated riparian habitat for federally listed species. The project will minimize the problems caused by vehicles traversing across and within Eagle Creek. The vehicles cause entrainment of sediments which increases turbidity. Morphologic features of the stream channel are also affected.

Forest Road 217 follows Upper Eagle Creek for approximately 11 miles on the Clifton Ranger District of the Apache Sitgreaves National Forests. The Apache Sitgreaves National Forests and Greenlee County have cooperatively maintained FR 217 under a Cooperative Agreement. Greenlee County has an easement which was established in 1953 under the road maintenance cooperative agreement. Upper Eagle Creek has had a long history of flooding resulting in road damage requiring emergency repair work. Floods in 1979, 1983, 1993, 1999 and 2005 all significantly impacted the road and required extensive rebuilding of three main low water creek crossings to allow the road to be passable for both private residents along Eagle Creek and for public access. Emergency repairs from the 1979 and 1983 floods required extensive rip-rap and fabric work on several sections of roadway, including a section at the crossing on San Carlos Apache Tribal lands. Emergency maintenance has typically involved blading of the road bed and the placing of material into stream crossing approaches and within the wetted channel of the creek to harden and stabilize the crossings. More recent maintenance has also involved placing 2-4 inch angular rock in the crossings at the stream and compaction of the rock with a vibratory roller with the primary objective of hardening the crossing and ensuring gradient flows in the creek.

The average maximum streamflow on Eagle Creek has been 5,356 cubic feet per second (cfs), and the maximum annual streamflow has ranged from a high of 36,800 cfs in 1993 to low of 95 cfs in 1996 (data courtesy of USGS 2007, peak flow data report). Annual high flows associated with monsoonal rain events and spring runoff in the Upper Eagle Creek watershed require that regular maintenance of the three road crossing occur on a near annual basis. There are three main low water crossings that regularly require maintenance work (from downstream to upstream): 1) "Reservation" Crossing which is located on the San Carlos Apache Reservation in T1N R27E S36; 2) "Filleman" Crossing which is located on private land in T1N R28E S19; and 3) "Smelley" Crossing located in T1N R28E S7. There are two additional crossings, one on the 217P road which crosses Eagle Creek on Forest land and one on BIA Road 8301 on the San Carlos Apache Reservation that crosses Willow Creek.

This project addresses the Filleman Crossing. The Fillemam crossing was originally perpendicular to Eagle Creek. The crossing has always been difficult to maneuver. After the flood of 1993, the north approach became a steep cutbank. The emergency repair work created a new north approach upstream of the old one resulting in the road being in Eagle Creek for approximately 200 feet. The crossing never returned to a perpendicular crossing. The proposed project would return the crossing to a perpendicular crossing across Eagle Creek.

Eagle Creek is identified as a Priority 1 stream by the Forest Service for its importance to viability and recovery of native fish, particularly threatened and endangered species. Eagle Creek contains three species protected by the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act), including loach minnow (*Tiaroga cobitis*), spikedace (*Meda fulgida*), and Gila chub (*Gila intermedia*) all three listed as threatened. Five other native fishes known to occupy Eagle Creek include longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys*

osculus), Sonora sucker (*Catostomus insignis*), desert sucker (*Catostomus clarki*), and roundtail chub (*Gila robusta*). These fish are not federally listed but are identified in the Arizona Wildlife Action Plan as species with greatest conservation need in the state. In addition to the native species, Eagle Creek at the project site is designated critical habitat for the Gila chub and loach minnow. Although Eagle Creek supports a relatively intact native fish community, the past and present impacts to the stream and its fish are substantial.

The road project would help address the problem of roads in the watershed which are a significant source of sedimentation in Eagle Creek. Roads are of concern since they are often contributors of sediment to stream courses (Harr and Nichols 1993). These restoration activities would directly benefit native fish populations in Eagle Creek. The loach minnow is sensitive to excess sediment in the aquatic ecosystem due to its placement of eggs on the underside of flattened rocks. Sediment loads are of particular concern due to the number of native fish that occupy the stream.

Planned Work

The objective of this project is to repair the road so that the road returns to a perpendicular crossing across Eagle Creek.

Material such as Armorflex (or other similar product), an interlocking paving system used in high flow, low stream crossings, would form an interlocking matrix of concrete blocks of uniform size, shape and weight connected by a series of cables installed over site specific filter fabric on a prepared surface. This would result in a non-erodible, stable surface which would last for 25+ years. The crossing would not be widened. Material would be placed with a front-end loader both upstream and downstream of the actual crossing for about 20 feet to allow creation of an effective buffer and riffle. Initial sediment disturbance would be minimal, little more than normally occurs during vehicle crossings. Sediment screens would be placed downstream, to reduce downstream effects. This method has been used on other crossings in Arizona with very good success. The Greenlee County Roads Manager and Forest Service Hydrologist will assess what materials are needed and draw a schematic diagram for work that is needed.

The Gila Watershed Partnership, formed in 1992 and comprised of local landowners, city, county, state and federal agencies, is pursuing an Arizona Water Protection Fund (AWPF) Grant to obtain funds that would be used as match for this project. The awards for AWPF occur in October. This Partners project is contingent upon receiving an AWPF grant.

The Apache-Sitgreaves National Forest Service is also very committed to the success of this project. The Forest has volunteered to do all the monitoring for the life of the project. The Forest is monitoring other projects in the area and wants to demonstrate improvements in the watershed.

The agreement term for this project is 10 years.

Project Summary	**Total**	**Restored**	**Enhanced**	**Established**
Wetland Acres:			6.9 Acres	
Upland Acres:				
Stream Miles/Acres:		.28 Miles	.71 Miles	
Riparian Miles/Acres:				

II. Contribution of the Parties:

The Service:

1. Agrees to cost-share in practices specified in this agreement, thus enhancing the value of the area for aquatic species.

2. Agrees to inspect the work periodically during construction, if necessary, and provide technical assistance regarding management and maintenance of the project.

3. Agrees to assist Cooperators in developing a monitoring plan for the project and to annually evaluate the management techniques and provide guidance regarding their success to ensure maximum benefits to wildlife.

Cooperator A:

1. Agrees to cost-share in the works of improvement for the property. Agrees to work with Cooperator B to complete the practices in a timely manner and meet the specifications of this agreement.

2. Agrees to maintain the site to the maximum benefit of wildlife for the term of this agreement.

Cooperator B:

1. Agrees to cost-share in the works of improvement for the property. Agrees to complete the practices in a timely manner and meet the specifications of this agreement.

2. Agrees to serve as a liaison and project coordinator in the implementation of facility modifications and to maintain the timeline for the project.

3. Agrees to provide ongoing project review and evaluation.

4. Agrees to work with the Service and the Forest Service in developing a monitoring plan.

5. Agrees to annually evaluate the management techniques and provide monitoring reports to the Service.

III. Cost estimates*:

TASK/ITEM	Practice Cost	Cooperator Cost Share	Partners
MATERIALS			
Filter Fabric	$3,000.00		$3,000.00
Rip-rap and large rock source	$100,000.00	$100,000.00	
LABOR AND EQUIPMENT			
Trackhoe, Loaders, 10 Wheel Dumps	$75,000.00	$53,000.00	$22,000.00
Vibratory Roller Loader	$7,000.00	$7,000.00	
TOTAL	**$185,000.00**	**$160,000.00**	**$25,000.00**

* The total Service's and Cooperator's cost-share must remain the same; however, funding may be redistributed between practices upon prior approval by the Service Project Officer.

IV. Work Schedule:
The project will not be implemented until the necessary environmental and archaeological compliance documents have been completed and approved by the Service. The Forest Service has agreed to complete many of the compliance documents and shall provide a copy of the completed documents for the project file. The project shall be completed within 2 years from the date of the last signature on the signature page. The final invoice for the project will not be accepted without project inspection and approval by the Service.

Contracted services must be completed and inspected by the Service before final payment can be released. Release of funds will be accomplished in accordance with guidelines stated in SECTION V., SUBPARAGRAPH C. This includes submission of an invoice with copies of all appropriate receipts to the Service Project Officer named in SECTION V., SUBPARAGRAPH A., above. Should weather or other uncontrollable situations arise, partial payment can be made upon completed segments of the project. The Cooperators should notify the Project Officer if such a situation should occur, as required in Section V.

Cooperator
Jan Holder, Program Manager
Gila Watershed Partnership

March 27, 2008
Date

Jennifer Graves
Project Officer, Partners for Fish and Wildlife

March 28, 2008
Date

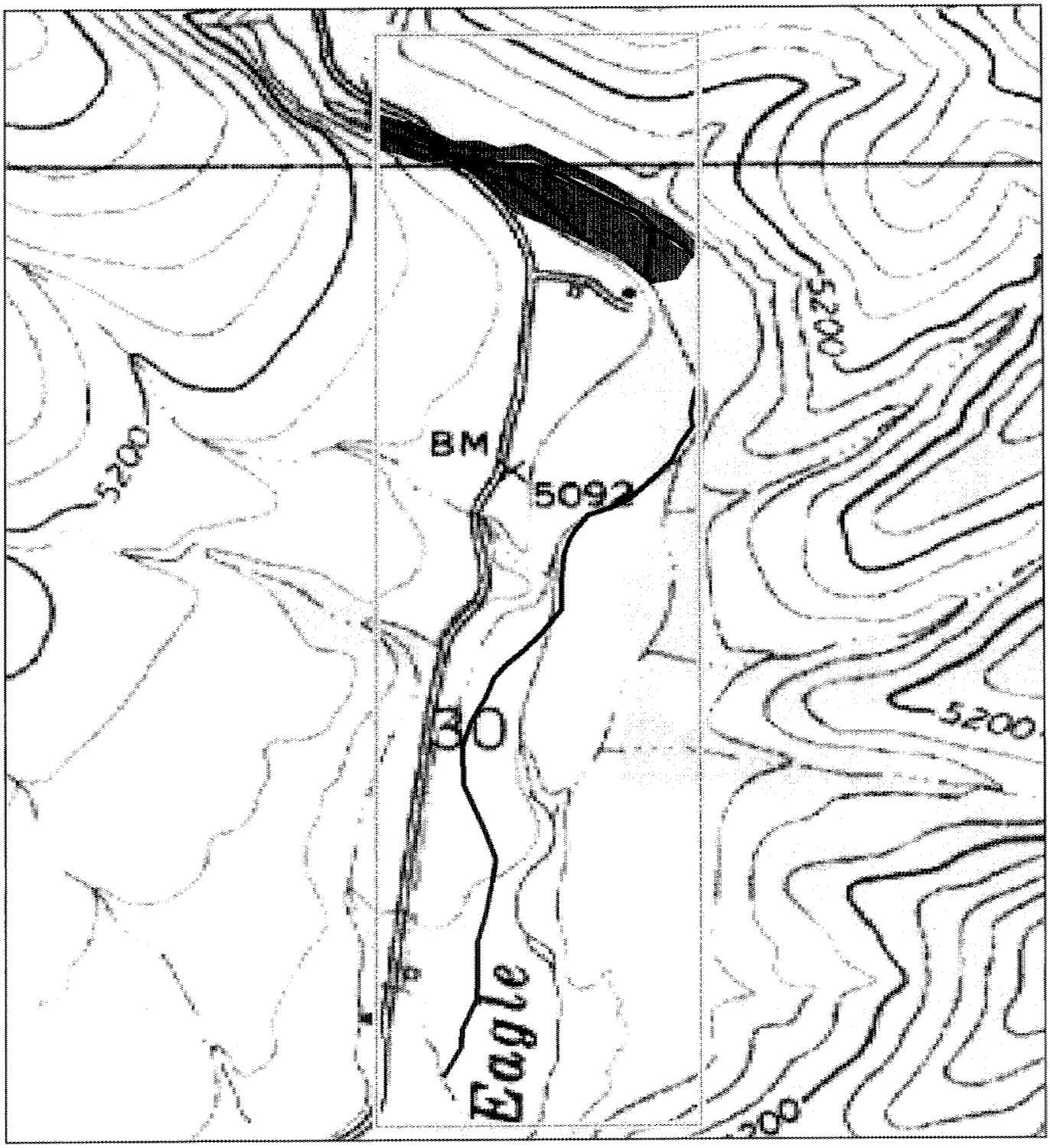
EXHIBIT B

U.S. Fish & Wildlife Service

Partners for Fish and Wildlife

Greenlee County, Arizona

Eagle Creek River Crossing Restoration



0 0.0375 0.075 0.15 Miles

0 500 1,000 2,000 Feet

PRODUCED BY USFWS ECOLOGICAL SERVICES
PHOENIX, ARIZONA
MAP DATE: 02/28/2008
BASEMAP: ROBINSON MESA/DOQQ 2006

Legend

Enhancement

Habitat Type

Wetland

Rivers/Streams/Shoreline

Private Property Boundary

EXHIBIT C

U.S. Fish & Wildlife Service

Partners for Fish and Wildlife

Greenlee County, Arizona

Eagle Creek River Crossing Restoration

0 0.03750.075 0.15 Miles

0 500 1,000 2,000 Feet

PRODUCED BY USFWS ECOLOGICAL SERVICES
PHOENIX, ARIZONA
MAP DATE: 02/28/2008
BASEMAP: ROBINSON MESA/DOQQ 2006

Legend

Enhancement

Habitat Type

Wetland

Rivers/Streams/Shoreline

Private Property Boundary

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

In Reply Refer to:

AESO/SE

April 4, 2008

Mr. John D. Newman
Commission Chair
Arizona Water Protection Fund
3550 North Central Avenue
Phoenix, Arizona 85012

Dear Mr. Newman:

The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to provide this letter written in support of the Arizona Water Protection Fund Grant application by Greenlee County for repair of a road crossing across Eagle Creek. The purpose of the grant is to obtain funding necessary to construct a new crossing to address and reduce the problem of vehicle damage in Eagle Creek, minimizing turbidity and sedimentation caused by these activities. The project will be effective in speeding the recovery of Eagle Creek by reducing downstream sedimentation and turbidity, stabilizing stream channel morphology, and protecting and enhancing habitat for federally listed species.

In 2007, the Service's Partners for Fish and Wildlife Program (Partners) received an application from the private landowner at the crossing and from Jan Holder of the Gila Watershed Partnership to help with the approach of the road on private land. The project ranked very high due to benefits to threatened and endangered species and was chosen for funding. However, due to budget cuts, the application was postponed for funding until fiscal year 2008. Partners has committed to obligating funds in 2008 to assist with this project. The success of the Partner's project is dependent on obtaining other funding sources for completion of the road crossing.

Eagle Creek contains one the richest fish faunas in the Arizona, including three species protected by the Endangered Species Act (ESA), the threatened loach minnow (*Tiaroga cobitis*), spikedace (*Meda fulgida*), and Gila chub (*Gila intermedia*). Five other native fishes also occupy Eagle Creek, including longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys osculus*), Sonora sucker (*Catostomus insignis*), desert sucker (*Catostomus clarki*), and roundtail chub (*Gila robusta*). In addition, Eagle Creek at the project site is designated critical habitat for the loach minnow and Gila chub.

Although Eagle Creek supports a relatively intact native fish community, past and present impacts to the stream and its fish from a number of activities are substantial. Roads are of concern since they are often contributors of sediment to stream courses. The loach minnow is

sensitive to excess sediment in the aquatic ecosystem because, during spawning, this species deposits its eggs on the underside of flattened rocks. Increased sediment loads can cause embeddedness of this spawning substrate, reducing the amount of available spawning habitat. Sedimentation is also a concern for the other native fish that occupy the stream, which also need clear water and coarse spawning substrates. The project would address these in-stream habitat problems by improving the road crossing, which is currently a significant source of sediment in Eagle Creek, thus directly benefiting native fish populations in Eagle Creek. In addition, by confining vehicles to the designated stream crossing, the channel morphology and associated riparian vegetation would be protected in this area of Eagle Creek.

Although the project would ultimately benefit native fish populations in Eagle Creek, there would likely be short-term adverse effects, necessitating ESA section 7 consultation with our office. However the proposal already includes many measures that would minimize potential adverse effects, and we are willing to help expedite all ESA compliance needed for the project.

We support this project and the protection that it will offer native fish in Eagle Creek and the valuable riparian habitat. We appreciate the opportunity to provide this letter of support. If you would like additional comments concerning this project please contact Kris Randall (x250) or Debra Bills (x239).

Sincerely,

Debra T. Bills

for Steven L. Spangle
Field Supervisor

cc: Frank Hayes, Apache-Sitgreaves National Forest, Clifton, AZ
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Jan Holder, Program Manager, Gila Watershed Partnership, Tucson, AZ

W:\Jennifer Graves\Correspondence\ADWR Letter of Support FINAL.doc:cgg

USDA United States Department of Agriculture | Forest Service | Apache-Sitgreaves National Forests Clifton Ranger District | 397240 AZ 75 Duncan, AZ 85534 (928) 687-1301 FAX: (928) 687-1614

File Code: 1580-2
Date: June 5, 2008

John D. Newman
Commission Chair
Arizona Water Protection Fund
3550 North Central Avenue
Phoenix, AZ 85012

Dear Mr. Newman:

I am writing this letter to express my support for the Gila Watershed Partnership, Greenlee County, and on behalf of Harold and Jeanette Filleman, land owners, and their application for grant funding for the Eagle Creek Riparian Restoration at Filleman Crossing grant project.

The Forest Service, in cooperation with Greenlee County, the Gila Watershed Partnership, and private land owners along Upper Eagle creek like the Fillemans, have pursued recovery of Eagle Creek for it's value as one of the most unique riparian and aquatic environments in Arizona. These partners have been diligent about achieving this goal by accomplishing many objectives. One vital objective includes ensuring that road management, specifically where Forest Road 217 crosses Eagle Creek, is completed in a manner that compliments natural riparian recovery and hydrologic recovery.

This grant project will greatly assist this ongoing effort with stabilization of the creek at this crossing location, protect private lands, as well as continue in the restoration effort of the Upper Eagle Creek riparian area.

I support their efforts to secure these grant funds, and are confident that they will be used in a very worthwhile and efficient manner.

Thank you for your consideration in this matter.

Sincerely,

Frank A. Hayes

FRANK A. HAYES
District Ranger

cc: Harold and Jeanette Filleman, Phil Ronnerud Greenlee County

DEBORAH K. GALE
County Administrator *(928) 865-2310
Clerk of the Board *(928) 865-2072

FACSIMILE # (928) 865-9332

AMY McCULLAR
District 1

HECTOR RUEDAS
District 2

RICHARD LUNT
District 3

BOARD OF SUPERVISORS
P.O. BOX 908
253 5TH STREET
CLIFTON, ARIZONA 85533

June 9, 2008

Arizona Water Protection Fund
3550 North Central Avenue
Phoenix, AZ 85012

Dear Representative of the Arizona Water Protection Fund,

I am writing this letter to express my support for the Gila Watershed Partnership and their application for grant funding for the Wildbunch Allotment Riparian grant project. This grant project will assist in the restoration effort of the Cienega Creek, Indian Creek, and Wildbunch Creek riparian areas.

I support their efforts to secure these funds, and am confident that they will be used in a very worthwhile and efficient manner. Additionally, Greenlee County confirms that long term maintenance and improvement of Road 217at Filleman Crossing will continue per the existing Special Use Permit from the Forest Service which grants easements through private property.

Sincerely,

Deborah K. Gale

Deborah K. Gale
County Administrator
Greenlee County

DEBORAH K. GALE
County Administrator *(928) 865-2310
Clerk of the Board *(928) 865-2072

FACSIMILE # (928) 865-9332

BOARD OF SUPERVISORS
P.O. BOX 908
253 5TH STREET
CLIFTON, ARIZONA 85533

AMY McCULLAR
District 1

HECTOR RUEDAS
District 2

RICHARD LUNT
District 3

June 6, 2008

Arizona Water Protection Fund
3550 North Central Avenue
Phoenix, AZ 85012

Dear Representative of the Arizona Water Protection Fund,

I am writing this letter to express my support for the Gila Watershed Partnership and their application for grant funding for the Eagle Creek Riparian Restoration at Filleman Crossing grant project. This grant project will assist in the restoration effort of the Upper Eagle Creek riparian areas.

I support their efforts to secure these grant funds, and am confident that they will be used in a very worthwhile and efficient manner.

Sincerely,

Deborah K. Gale

Deborah K. Gale
County Administrator
Greenlee County

THE UNIVERSITY OF ARIZONA

Water Resources Research Center
Agriculture and Life Sciences

350 N Campbell Ave.
P.O. Box 210437
Tucson, AZ 85721
(520)792-9591
Fax: (520)792-9591
http://cals.arizona.edu/AZWATER

ARIZONA COOPERATIVE EXTENSION

June 4, 2008

Arizona Department of Environmental Quality
319 Grant Program
1110 W. Washington Street
Phoenix, AZ 85007

RE: *Eagle Creek Riparian Restoration at Filleman Crossing Grant Project*

I am writing this letter to express my support for the Gila Watershed Partnership and their application for grant funding for the *Eagle Creek Riparian Restoration at Filleman Crossing Grant Project.* This project will stabilize and enhance the Filleman Crossing of Eagle Creek. In addition, the project will allow closure of an in-stream travel crossing, and re-establish riparian habitat along the river banks. Arizona NEMO supports the goals of this project because it is consistent with the program objectives of our educational outreach to watershed groups across the State, but, more importantly, will educate the community on the link between water quality and watershed health. In addition, this project will improve and restore the health of this watershed, which will have lifelong benefits for all of us.

Arizona NEMO [Nonpoint Education for Municipal Officials] is tasked with educating land-use decision makers to make voluntary actions that will mitigate water pollution. NEMO is a non-regulatory, research-based educational program using geospatial information and other advanced technologies for outreach education, analysis, and research addressing water quality and sustainability concerns in Arizona.

NEMO looks forward to collaborating with the Gila Watershed Partnership and will provide access to watershed planning tools, GIS maps, and outreach support, consistent with our Watershed Plan outreach. Please contact me if you have any questions or if you are in need of additional information.

Sincerely,

Terry Sprouse
www.ArizonaNEMO.org

UPPER EAGLE CREEK WATERSHED ASSOCIATION

June 10, 2008

Chase Caldwell
President

Nick Ewing
Vice President

Darcy Ely
Secretary

Shirley Winkle
Treasurer

Gary Ely

Pamela Ewing

Twig Winkle

Executive Director
Carol Hayes

Arizona Water Protection Fund
3550 North Central Ave.
Phoenix, AZ 85012

Dear Representatives of the Arizona Water Protection Fund:

I am writing this letter to express my support for the Gila Watershed Partnership and their application for grant funding for the Eagle Creek Riparian Restoration at Filleman Crossing grant project. This grant project will assist in the restoration effort of the Upper Eagle Creek riparian area.

I support their efforts to secure these grant funds, and are confident that they will be used in a very worthwhile and efficient manner.

Thank you for your consideration in this matter.

Sincerely,

Chase L. Caldwell

Chase L. Caldwell
President

PO BOX 1756 • CLIFTON AZ • 85533 /PHONE: 480-529-2624

Graham County

ARIZONA COOPERATIVE EXTENSION

COLLEGE OF AGRICULTURE AND LIFE SCIENCES

PO Box 127 • 2100 S. Bowie Avenue • Solomon AZ 85551-0127 • (928) 428-2611 • FAX: (928) 428-7023

June 10, 2008

Arizona Water Protection Fund
3550 North Central Ave.
Phoenix, AZ 85012

Dear Representatives of the Arizona Water Protection Fund:

I am writing this letter to express my support for the Gila Watershed Partnership and their application for grant funding for the Eagle Creek Riparian Restoration at Filleman Crossing grant project. This grant project will assist in the restoration effort of the Upper Eagle Creek riparian area.

I support their efforts to secure these grant funds and I am confident that they will be used in a very worthwhile and efficient manner.

Thank you for your consideration in this matter.

Sincerely,

Bill Brandau
Graham County Cooperative Extension Director
Area Agent, Agriculture and Natural Resources
University of Arizona Cooperative Extension
P.O. Box 127
Solomon, Arizona 85551
wbrandau@cals.arizona.edu

WPF 0357 INDIAN CROSSING

SPECIAL USE PERMIT

Crook National Fo

Permission is hereby granted to Greenlee County

of Clifton, Arizona

hereinafter called the permittee, to use, subject to the conditions set out below, the following-descr lands or improvements: Eagle Creek Road, F.S. 217, a road as now in place, and a ri of-way 132' wide, 66 ' on each side of center line, beginning at the Jct. of F.S. and U. S. 666, thence to Honeymoon Cabin, a distance of approximately 24 miles. Juan Miller Road, F.S. 475, a road now in place and a right-of-way 132 ' wide, 66 on each side of center line, beginning at the Jct. of F.S. 475 and U.S. 666, ther to the Jct. of the Stacy-Fritz Roads, a distance of approximately 11 miles.

This permit covers ~~acres and/or~~ 35 miles for the purpose

Maintaining and betterment of two roads originally constructed by the U. S. Gover for administration purposes and use of the general public.

STATE OF ARIZONA, County of Greenlee ss: Fee $ 20 No. 164
I hereby certify that this instrument was filed for record at request of Board of Supervisors, 1-7- 1965 at 8:15 A.M. in Bk. No. 18 Page 32-34. Witness my hand and official seal.

By ____________ Deputy Recorder

Elizabeth Lea
County Recorder

The exercise of any of the privileges granted in this permit constitutes acceptance of all the con- tions of this permit.

Issued free of charge under Reg. U-11(A)

2. Construction or occupancy under this permit shall begin within _____ months, and construction of _____ shall be completed within _____ months from the date of issuance. This use shall be actually exercised at least 365 days each year, unless otherwise authorized in writing.

3. Development plans; lay-out plans; construction, reconstruction, or alteration of improvements; or revision of lay-out or construction plans for this area must be approved in advance and in writing by the forest supervisor. Trees or shrubbery on the permitted area may be removed or destroyed only after the forest officer in charge has approved, and has marked or otherwise designated that which may be removed or destroyed. Merchantable timber cut must be paid for by the permittee. Trees, shrubs, and other plants may be planted in such manner and in such places about the premises as may be approved by the forest officer in charge.

4. The permittee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the forest officer in charge.

5. This permit is subject to all valid claims.

6. The permittee, in exercising the privileges granted by this permit, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations which are applicable to the area or operations covered by this permit.

7. The permittee shall take all reasonable precautions to prevent and suppress forest fires. No material shall be disposed of by burning in open fires during the closed season established by law or regulation without a written permit from the forest officer in charge or his authorized agent.

8. The permittee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this permit, and shall pay the United States for any damage resulting from negligence or from the violation of the terms of this permit or of any law or regulation applicable to the national forests by the permittee, or by any agents or employees of the permittee acting within the scope of their agency or employment.

9. The permittee shall fully repair all damage, other than ordinary wear and tear, to national forest roads and trails caused by the permittee in the exercise of the privilege granted by this permit.

10. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this agreement or to any benefit that may arise herefrom unless it is made with a corporation for its general benefit.

11. Upon abandonment, termination, revocation, or cancellation of this permit, the permittee shall remove within a reasonable time all structures and improvements except those owned by the United States, and shall restore the site, unless otherwise agreed upon in writing or in this permit. If the permittee fails to remove all such structures or improvements within a reasonable period, they shall become the property of the United States, but that will not relieve the permittee of liability for the cost of their removal and restoration of the site.

12. This permit is not transferable. If the permittee through voluntary sale or transfer, or through enforcement of contract, foreclosure, tax sale, or other valid legal proceeding shall cease to be the owner of the physical improvements situated on the land described in this permit, and be unable to furnish adequate proof of ability to redeem or otherwise reestablish title to said improvements, this permit shall be subject to cancellation. But if the person to whom title to said improvements shall have been transferred in either manner above provided is qualified as a permittee, and is willing that his future occupancy of the premises shall be subject to such new conditions and stipulations as existing or prospective circumstances may warrant, his continued occupancy of the premises may be authorized by permit to him if in the opinion of the forest officer issuing the permit it is desirable and in the public interest.

13. In case of change of address, the permittee shall immediately notify the forest supervisor.

14. The temporary use and occupancy of the premises and improvements herein described may not be assigned by the permittee to third parties without the prior written approval of the forest supervisor and the permittee shall continue to be responsible for compliance with all conditions of this permit by persons to whom such premises may be assigned.

15. This agreement may be terminated by mutual consent or by any other conditions thereunder at the discretion of the Secretary of Agriculture or his duly authorized representative.

16. In the event of any conflict between any of the preceding printed clauses or any provisions thereof and any of the following clauses or provisions hereof, the preceding printed clauses will control.

[illegible]

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

WPF0379

In Reply Refer to:

AESO/SE

April 4, 2008

RECEIVED
APR - 7 2008
ARIZONA WATER PROTECTION FUND

Mr. John D. Newman
Commission Chair
Arizona Water Protection Fund
3550 North Central Avenue
Phoenix, Arizona 85012

Dear Mr. Newman:

The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to provide this letter written in support of the Arizona Water Protection Fund Grant application by Greenlee County for repair of a road crossing across Eagle Creek. The purpose of the grant is to obtain funding necessary to construct a new crossing to address and reduce the problem of vehicle damage in Eagle Creek, minimizing turbidity and sedimentation caused by these activities. The project will be effective in speeding the recovery of Eagle Creek by reducing downstream sedimentation and turbidity, stabilizing stream channel morphology, and protecting and enhancing habitat for federally listed species.

In 2007, the Service's Partners for Fish and Wildlife Program (Partners) received an application from the private landowner at the crossing and from Jan Holder of the Gila Watershed Partnership to help with the approach of the road on private land. The project ranked very high due to benefits to threatened and endangered species and was chosen for funding. However, due to budget cuts, the application was postponed for funding until fiscal year 2008. Partners has committed to obligating funds in 2008 to assist with this project. The success of the Partner's project is dependent on obtaining other funding sources for completion of the road crossing.

Eagle Creek contains one the richest fish faunas in the Arizona, including three species protected by the Endangered Species Act (ESA), the threatened loach minnow (*Tiaroga cobitis*), spikedace (*Meda fulgida*), and Gila chub (*Gila intermedia*). Five other native fishes also occupy Eagle Creek, including longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys osculus*), Sonora sucker (*Catostomus insignis*), desert sucker (*Catostomus clarki*), and roundtail chub (*Gila robusta*). In addition, Eagle Creek at the project site is designated critical habitat for the loach minnow and Gila chub.

Although Eagle Creek supports a relatively intact native fish community, past and present impacts to the stream and its fish from a number of activities are substantial. Roads are of concern since they are often contributors of sediment to stream courses. The loach minnow is

sensitive to excess sediment in the aquatic ecosystem because, during spawning, this species deposits its eggs on the underside of flattened rocks. Increased sediment loads can cause embeddedness of this spawning substrate, reducing the amount of available spawning habitat. Sedimentation is also a concern for the other native fish that occupy the stream, which also need clear water and coarse spawning substrates. The project would address these in-stream habitat problems by improving the road crossing, which is currently a significant source of sediment in Eagle Creek, thus directly benefiting native fish populations in Eagle Creek. In addition, by confining vehicles to the designated stream crossing, the channel morphology and associated riparian vegetation would be protected in this area of Eagle Creek.

Although the project would ultimately benefit native fish populations in Eagle Creek, there would likely be short-term adverse effects, necessitating ESA section 7 consultation with our office. However the proposal already includes many measures that would minimize potential adverse effects, and we are willing to help expedite all ESA compliance needed for the project.

We support this project and the protection that it will offer native fish in Eagle Creek and the valuable riparian habitat. We appreciate the opportunity to provide this letter of support. If you would like additional comments concerning this project please contact Kris Randall (x250) or Debra Bills (x239).

Sincerely,

Debra T. Bills

for Steven L. Spangle
Field Supervisor

cc: Frank Hayes, Apache-Sitgreaves National Forest, Clifton, AZ
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Jan Holder, Program Manager, Gila Watershed Partnership, Tucson, AZ

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