Arizona Water Protection Fund
FY 2009 Grant Application Review

Application # WPF0381 **Applicant:** CARLYLE & MARTY CATHCART

Title of Project: WILD BUNCH ALLOTMENT RIPARIAN RESTORATION

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**

ORIGINAL

Arizona Water Protection Fund
Application Cover Page
FY 2009

WPF0381

Title of Project: Wildbunch Allotment Riparian Restoration

Type of Project:	**Stream Type:**	**Your level of commitment to maintenance of project benefits and capital improvements:**
☒ Capital or Other ☐ Water Conservation ☐ Research	☒ Perennial ☒ Intermittent ☐ Ephemeral	☐ < 5 years ☐ 5-10 years ☐ 11-15 years ☒ 16-20 years

Applicant Information:

Name/Organization: Carlyle and Marty Cathcart
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:
Title:
Phone:
Fax:
e-mail:

Any Previous AWPF Grants:

☐ Yes ☒ No

If yes, please provide Grant #(s):

Arizona Water Protection Fund Grant Amount Requested:

$ 161,260.98

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	
2. U. S. Forest	
3.	

Total: 103,421

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.

Carl and Marty Cathcart	Landowner/Permittee [illegible]
Typed Name of Applicant or Applicant's Authorized Representative	**Title and Telephone Number**
X [signature]	X 6/6/08
Signature	**Date Signed**

RECEIVED
JUN [illegible]
ARIZONA WATER PROTECTION FUND

EXECUTIVE SUMMARY

Background

The Wildbunch Allotment is located on the Clifton Ranger District of the Apache-Sitgreaves National Forest's in Greenlee County, Arizona. The allotment encompasses about 23,000 acres, most of which are National Forest System Lands and 15 acres are private land belonging to the Permitees, Carlyle and Martha Cathcart. The Allotment encompasses portions the Lower Blue River and Middle San Francisco River in the Upper Gila River watershed. The Allotment has been grazed since the late 1880's, with early use concentrated on perennial waters like the Blue River, or perennial wetlands or springs like those found in Wildbunch, Cienega, and Indian Canyons.

Prior to 2000, livestock were allowed to disperse to access limited water and forage, resulting in year-round livestock grazing. In 2000, deferred rotation was implemented to provide riparian and associated upland time. About 5 miles of the Blue River, technically within the allotment boundaries, has remained excluded from livestock since 1995.

Range improvements need to be constructed to aid and improve livestock distribution, and protect critical sensitive riparian resources. Key improvements include fencing to isolate Indian Creek as a winter use riparian pasture, and fencing to provide protection and recovery of Upper Cienega canyon, and Wildbunch canyon. Selected cutting and placement of woody debris will occur within riparian drainages to improve functionality, act as barriers to livestock use, reduce woody species competition, and to enhance establishment of riparian woody and herbaceous obligate species.

Implementation and effectiveness of the proposed action will be monitored over the life of the project.

In cooperation with the Clifton Ranger District and as an anticipated part of the completion of NEPA and development of the Allotment Management Plan, we request funding to complete construction of several key fences to better manage and allow recovery of riparian resources on the Wildbunch Allotment In addition, we are seeking funding to complete debris jam placement as designed by the Forest Service to enhance and protect riparian areas and improve functioning condition in Wildbunch, Mud Springs, Upper Cienega, and Indian canyons.

PROJECT OVERVIEW

Background

The Wildbunch Allotment is located on the Clifton Ranger District of the Apache-Sitgreaves National Forest's in Greenlee County, Arizona (see attached Location Map), The allotment encompasses about 23,000 acres (36 square miles), most of which are National Forest System Lands and 15 acres are private land belonging to the Permittees, Carlyle and Martha Cathcart. The Allotment encompasses portions the Lower Blue River and Middle San Francisco River in the Upper Gila River watershed (see attached Major Drainages Map). The Allotment has been grazed with livestock yearlong with cattle since the late 1880's, with early use years concentrated on perennial waters like the Blue River, or perennial wetlands or springs on the Allotment like those found in Wildbunch, Cienega, and Indian Canyons.

Historically, stocking rates were almost twice the present stocking rate, with an average of about 300 cows/calves yearlong, 180-220 yearlings for 9-12 months, and 10 horses. Actual use in animal unit months averaged about 6300 over the 27 years of stocking records.

The Term Grazing Permit for the Wildbunch Allotment was issued to the present permittee in December 1994 (attached), along with an accompanying Memorandum of Understanding (attached) for reduced stocking to about 66% of permitted animal unit months. Previous range analyses and conditions of range improvements at the time of transfer indicated the allotment was overstocked.

With the Rescission Act of 1995, the Forest prioritized allotments based on resource issues and potential impacts for future analysis. The relationship to habitat for federally listed native fish and other resource conditions on the allotment resulted in the Forest Supervisor delineating this allotment as Priority 1 for analysis. Based on guidelines from the Rescission Act, in 1999 a new 10 year Term Grazing Permit was issued with continuance of the 1994 MOU for resource protection and reduced stocking rates until completion of the environmental assessment for grazing and development of an Allotment Management Plan (AMP).

Prior to 2000, livestock were allowed to disperse across the allotment in small herds to access available but often limited water and forage, resulting in year-round livestock grazing in all parts of the allotment. In 2000, a deferred rotation management system was implemented to provide riparian and associated upland areas with extended deferment for plant recovery of 16-18 months for riparian pastures. After various attempts at other deferred grazing programs, the deferred rotation management program emphasizing riparian pasture areas was re-implemented in 2006 and is now in place. About 5 miles of the Blue River, technically within the allotment boundaries, has remained excluded from livestock since 1995.

Allotment analysis and assessment to issue a new Term Grazing Permit and an Allotment Management Plan was initiated in 2004, and a final Environmental Assessment and Decision is expected by July 1, 2008. The preferred alternative is a variable numbers grazing permit that reduces current permitted animal unit months about 40%, and will authorize year-round grazing on the Allotment. Actual sequence and timing of pasture

moves will be based on monitoring information and responses of natural resources to weather and grazing activities, and emphasis on continued improvement and recovery of riparian and wetland resources. This grazing program is similar to what is described through the 2008 Annual Operating Instructions (attached) using 5 large pasture areas (see attached Wildbunch Pasture map).

Range improvements need to be constructed to aid and improve livestock distribution, protect sensitive riparian resources (critical areas), and assist in achieving desired conditions. Key improvements needed include fencing to isolate Indian Creek as a winter use riparian pasture, and fencing to provide protection and recovery of selected intermittent flow in Upper Cienega canyon, and Wildbunch canyon. Selected cutting and placement of woody debris will occur within riparian drainages (Indian, Cienega, Wildbunch) to improve functionality, act as barriers or impediments to livestock use and trailing, reduce woody species competition, and to enhance establishment of riparian woody and herbaceous obligate species. Implementation and effectiveness of the proposed action will be monitored over the life of the project.

In cooperation with the Clifton Ranger District and as an anticipated part of the completion of NEPA and development of the Allotment Management Plan, we request funding to complete construction of several key fences to better manage and allow recovery of riparian resources on the Wildbunch Allotment (Note attached project Maps). In addition, we are seeking funding to complete debris jam placement as designed by the Forest Service to enhance and protect riparian areas and improve functioning condition in Wildbunch, Mud Springs, Upper Cienega, and Indian canyons.

Project Site Description

Detailed descriptions of existing resource conditions, specifically related to riparian resources, can be found in the several specialist reports (attached) used in development of the final Wildbunch Allotment Environmental Assessment. The following narrative relies extensively on that assessment and the specialist reports for the following site description.

From the very start of the allotment assessment, soil condition has been used as an indicator of watershed health. Soil properties that affect watershed health are primarily those factors which promote infiltration and hydrologic roughness, which slow runoff and sediment, and reduce damaging flood flows. The key to protecting watershed health is maintaining good ground cover (plant basal area and litter) and is the direct link to the vegetation management of the allotment, including recovery of riparian areas. Flexibility and dependability of using various pastures and allowing rest from livestock grazing is an understood key factor in improving the health of watersheds and soils. While herding and management of waters is very important, fences often become the best but most expensive option for ensuring recovery of grass forage and riparian areas as well. Because upland soil conditions require years to improve, they often can remain the same as originally inspected years before unless drastic changes in livestock management occur that will allow observable changes on the land.

Water quality is also another measure of the health of uplands and riparian/aquatic resources. The most recent information provided by Arizona Department of Environmental Quality, the 2004 ADEQ report, noted that 15 miles of the San Francisco River- from the New Mexico Border to confluence with the Blue River (Reach Number AZ15040004-003) was monitored by ADEQ from 1999 to 2002 and was determined to be "attaining some uses". This placed the reach on the state's Planning List due to "exceedence of the former turbidity standard." Indian Creek drains from Wildbunch allotment for it's entire 6 mile length into this stretch of the San Francisco river.

The stretch of the Blue River from Strayhorse Creek to the confluence with the San Francisco River (Reach Number AZ15040004-025B) was monitored from 1998 to 2002. No exceedence in water quality standard was found and the reach was determined to be attaining water quality standards for all designated uses, including turbidity.

There are numerous drainages on the allotment that provide important resources for both livestock and wildlife. Each reach of these drainages was classified into one of four types, as summarized in the table below. Within the allotment all drainages flow directly into either the Blue River or the San Francisco River so existing conditions on these two rivers are included in this section as well.

No concerns were identified regarding current condition of xero-riparian on the allotment. Because the function of ephemeral reaches is the same as that of uplands, the drainage type is considered within, and as part of, uplands. Riparian areas, which include spring areas and intermittent flow sections, are especially important because their current condition has been identified as a concern and taken forward as an issue in the allotment analysis.

Table 1.0 Description, Locations and Miles of Drainages Types on the Wildbunch Allotment

Drainage Type	Descriptions and Locations	Total Miles
Fish Bearing	Perennial flows and known to contain some life stage of native fish species: Blue River and San Francisco River	19.5
Riparian	Spring or intermittent* water flow with obligate riparian vegetation present: portions of Cienega, Fritz, Hog, Mud Springs, Wildbunch Canyons, and Indian Creek	14.2
Xeroriparian	Wider valley widths with slower flows such that non-riparian obligate species (e.g., live oak) grown thicker or larger than in the uplands: portions of Cienega, Dry Prong, Fritz, Hog, Mud Springs, Spring and Wildbunch Canyons	11.5
Ephemeral	Drainages found in steeper, headwater reaches of drainages, and typically only have running water during high intensity, short duration precipitation events: portions of Cienega, Dry Prong Fritz, Hog, Mud Springs, Oak Springs, Roan Cow, Rock Tank, Salt Ground, Suicide, Wildbunch and many un-named canyons.	53.4

*Intermittent or interrupted flows, i.e., in this drainage type, water is almost always perennially present, either on the surface or just at the subsurface.

Riparian. Table 2.0 summarizes existing conditions on the allotment for the riparian drainages based on data collected in 1999 from a representative number of reaches using the Forest Service's Proper Functioning Condition (PFC) methodology. A rating of

"Proper Functioning Condition" indicates that most components are in satisfactory condition and meet Forest Plan riparian standards. A rating of "Not Functioning" indicates that many components within the drainage reach are in unsatisfactory condition and do not meet standards. A rating of "Functioning at Risk" may indicate some improvement in conditions but some standards are still not being met, such as very large woody debris, or establishment of seedlings of woody species for example.

Table 2.0 Riparian Existing Conditions – Wildbunch Allotment

COMPONENTS *	EXISTING CONDITIONS
(1) Streambank stability	Most reaches exhibit inadequate stream bank stability necessary to prevent accelerated erosion of the cobble-gravel alluvium.
(2) Diversity of species composition	Most reaches have diversity in the number of native, woody riparian species, or with herbaceous species such as Pine or Deer muhly.
(3) Diversity of species age classes	Most reaches lack diversity in age classes of native, woody species necessary for recovery (especially the seedling/sprout and young/sapling age classes are limited or lacking), or herbaceous species.
(4) Streamside canopy cover	Along the majority of this drainage type, riparian obligate woody riparian cover is lacking, and herbaceous cover is limited.
(5) Adequate floodplain interaction	Most reaches exhibit insufficient floodplain/channel configuration to allow normal flooding necessary to dissipate energy and deposit sediment (bank-building). Lack of large woody debris is lacking to encourage meandering and deposition of fines.
(6) Properly functioning condition	The overall current condition of most reaches (16 of 19) is unsatisfactory because they are Not functioning or are Functioning at risk.

* These components are condition indicators based on the Forest Plan.

Wildbunch Canyon – Two reaches were assessed for functioning condition in 1999. The Lower Reach includes a 1.25 mile portion adjacent to and above where Wildbunch canyon crosses Forest Road 475. The Upper Reach, about 1.25 miles in length, is located about 2.25 miles above Forest Road 475 and extends to the upper part of the watershed.

The Lower Reach, classified as xero-riparian, was rated as non-functioning due to several factors including incised channel and lack of floodplain, lack of woody debris for deposition and development of woody and herbaceous establishment, and a lack of age class diversity. Observations during field inspections since data was collected indicates some improvement in meandering, deposition, and establishment of both herbaceous and woody species. While the trend for improved riparian conditions is up, there remains a lack of large woody debris contributing to increased deposition and establishment of important herbaceous species that help with flood plain establishment.

The Upper Reach, classified as riparian throughout its extent, was considered properly functioning. However, herbivory by livestock and lack of woody debris was preventing much of this section to reach full recovery potential. Observations in recent inspections since 2006 indicate improved establishment of both herbaceous and woody species, especially where large woody debris has accumulated and resulted in deposition of fines and aggregates. Extended rest from grazing has improved uplands and allowed improved riparian conditions, and trend is up. However, where down woody debris has captured

sediments and blocked access by livestock, woody species seedlings and saplings are becoming established.

Cienega Creek - Four reaches were assessed over 5 miles of this drainage for functioning condition in fall of 1999. The lowest reach extends from the mouth at the Blue River up stream about 1.5 miles to about ¼ mile below where Forest Road 475 crosses Cienega canyon. The second reach, about 2 miles, is the section where Forest Road 475 exists past Cienega cabin, and then up canyon from the cabin about 5/8th of a mile. Reach three is about ½ mile and is located within a very confined, bluffy portion of the canyon. The last and fourth reach, about 1 mile in length, extends to the head of the watershed and extends past Upper Cienega Spring exclosure.

Reach One – considered properly functioning as it's within narrow confined walls and not subject to substantive changes or flows from uplands.

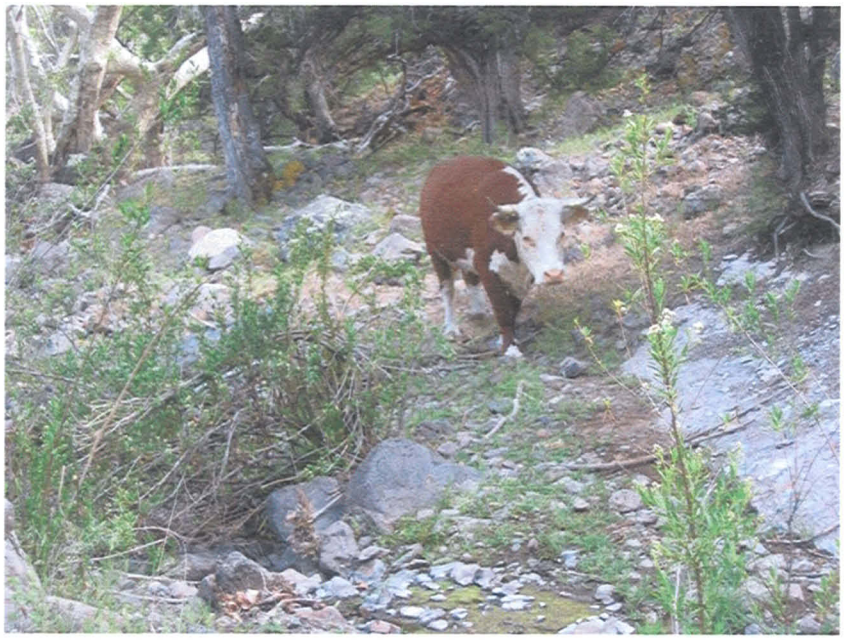
Reach Two – this section has had the most significant impacts over the last 130 years of livestock grazing and associated uses from road maintenance and use. Classified as a xero-riparian drainage type, it was considered and remains non-functional due to channeling that does not allow flood plain development and lack of herbaceous cover, as well as woody debris. In more recent years, inspections do reveal an improvement in flood plain activity due in part to increased woody debris and some depositing of larger cobble materials, but most notable improved uplands conditions slowing water flows.

Reach Three – considered to be functioning at risk, this stretch lacks adequate large woody debris and herbaceous bank support to be fully functional. This reach is classified as riparian even though flow is generally intermittent. There are some excellent examples of the potential for much of this stretch as a riparian corridor and possible native frog habitat, but continued impacts from livestock and some trailing during key seasonal use periods do not allow effective or adequate recovery time. In most years, seasonal to year long water flows occur with residual water remaining in some deep plunge pools for much of the summer. This reach of Cienega Creek is deeply entrenched and has a limestone bedrock substrate through much of the corridor. . The series of plunge pools provides vital habitat for a variety of water dependent species, in particular canyon tree frogs and leopard frog species.

Photo on Page 10 shows a plunge pool and riparian in Cienega within a protected section not accessible by livestock.

Dominant vegetation in the riparian area of Cienega Creek is Pine or Deer Muhly (a large robust bunch grass found only in intermittent or subsurface flows) with sedges and rushes found near perennial waters. Seep willow (not true willow) is common, but other willows and cottonwoods are present if only sporadically due to herbivory and lack of deposition of fines where seedlings can become established. Only one sapling cottonwood was observed and documented in Cienega Creek during an inspection in 2005. Alternating grazing and rest has enabled some recovery, but concentrated livestock during times of use continues to reduce recovery rate.

Reach Four – This stretch was also classified riparian due to remnant occurrence of woody species. Upper Cienega Spring, which is fenced from continued livestock use, and sporadic occurrences of other woody species and grasses and sedges occur within this stretch. It was rated properly functioning in 1999 primarily because of the amount of bedrock and uplands were having less of an impact on riparian establishment and conditions than lower reaches. The picture above is an example of this reach. Concentrated grazing on woody species was noted during seasonal periods of use, along with trailing as noted in the picture below.



The picture above is another example of concentrated use in Upper Cienega canyon where intermittent flows occur. Use is often occurring from very few animals that have drifted into the drainage, but is in stark contrast with the picture of healthy riparian on page 10.

Indian Creek – Although not surveyed during the PFC assessments completed in 1999, several inspections have been conducted during the last several years within this canyon drainage. There is much evident of historic yearlong livestock use within this relatively

narrow drainage that extends a total length of about 3.5 miles from the uplands to the confluence with the San Francisco River. Most of this length is encompassed within the Wildbunch allotment, although only about 2 miles is accessible. More recent use has been done where winter season use of 4-6 months is followed by 16-18 months of rest to ensure recovery of uplands and riparian areas.

The upper reaches of Indian Creek, as shown in the picture above, are characterized by extensive galleries of old growth riparian woody vegetation along with encroachment of adjacent woodland tree species such as Single leaf Pinyon pine and One-see juniper. While there is some large woody debris present in the drainage, the actual channel is deeply incised much of the entire length except the upper 1 mile reach which is stable and considered properly functioning at present. Incised channeling in lower reaches, especially downstream of the confluence with Oak Canyon, has resulted in a loss of water availability for regeneration of woody and herbaceous species. While the present grazing program does provide for recovery of grazing effects, it cannot address invasive woody encroachment, lack of woody debris and deposition of fines for seedlings, and loss of flood plain function. The entire 2.5 miles is classified as a riparian drainage type, although perennial flows only occur in the top 1.5 miles of the canyon.

The picture above is within the deeply incised drainage area of Indian, and below most of the old growth galleries where perennial flows are found. Note lack of perennial flow in this picture.

Goals

The goal of the project is two fold. First is to enhance and promote continued recovery and expansion of riparian vegetation and aquatic habitats within major drainages encompassed by Wildbunch allotment. Second is to encourage and support proper and effective land stewardship where there is demonstrated commitment and willing participation by the livestock grazing permittee on Forest lands. Implementation of project tasks is expected to enhance not only riparian recovery but compliment ongoing management of livestock programs targeting pastures for exclusive use during periods that will minimize affects and optimize short term recovery of riparian resources. These actions are expected to noticeably increase and extend riparian vegetation development, and long-term increase perennial stream flow. In addition, these actions are also expected to greatly improve the ability of the present permittee to obtain proper livestock distribution and maintain an effective grazing program.

Objectives

1) Isolate Indian Creek as a separate pasture for planned dormant or winter season use by livestock and extended rest periods to ensure recovery from grazing impacts
2) Improve the effectiveness of efforts by the permittee to obtain proper livestock distribution, achieve established forage use levels, and reduce unnecessary impacts to riparian zones in specified drainages across the allotment
3) Promote and ensure recovery of specific small sections of live riparian stream drainage within Indian Creek and Upper Cienega Creek to act as a pinch point for expansion of riparian vegetation development and as a control to monitor recovery rates.
4) Increase the amount of down woody debris within specified riparian corridors to move toward a desired future condition that can contribute to fully functional conditions.
5) Establish and implement monitoring that will clearly demonstrate riparian recovery rates resulting from combining extended rest with short durations of grazing, and the additive factor of increased woody debris.

Statement of Problems

Like allotments across the Clifton Ranger District, Wildbunch Allotment has been grazed continuously with livestock since about 1885. Not until the present permittee was issued the Term Grazing Permit were livestock stocking rates significantly reduced to estimated carrying capacities. Although a relatively progressive grazing management program has been implemented for several years, and several range improvements have been made functional that aide in improving livestock distribution, concentrated impacts are still occurring to some riparian drainages on the Allotment. Many of these riparian areas are not fully functioning to remove sediments during high flows and have lost the plant diversity observed in reference riparian reaches.

Wildbunch canyon, within Mud Springs pasture, encompasses some isolated but important riparian springs and intermittent flow that supports riparian and aquatic species such as native frogs. The canyon has incised to bedrock in many places over the last century. While some improvement in conditions and re-establishment of native herbaceous and woody species is occurring, the rate of recovery appears most limited by a lack of down woody debris and concentrated impacts by livestock at seasonal times.

Upper Cienega Creek, including reaches within the South and Roan Cow pastures, contains some excellent examples of reference conditions that clearly show the potential of portions of the drainage system. The confines of the canyon and limited water availability contribute to concentrated use (grazing, trampling) on a very small portion of each pasture. Because these small zones are considered 'critical areas" of management, the impacts on these sites often limits the availability of the remainder of the pasture to implement a proper and effective grazing program. Re-establishment of native woody riparian species is not occurring at an acceptable rate, and heavy use is still occurring on important herbaceous species that provide watershed and riparian stabilization.

Indian Creek still encompasses an extensive gallery of old growth riparian overstory trees, but regeneration of younger size trees is very limited even though alternated winter grazing has been implemented for several years. Two factors that appear to be limiting re-establishment of woody and herbaceous species that would improve function of the drainage includes reducing invasive overstory species such as Pinyon and One-seed juniper, and lack of large woody debris for inducing meanduring and deposition of aggregate materials for seed beds.

Statement of Solutions

Finalization of ongoing NEPA analysis with a decision that will provide for reduced permitted numbers and maintaining current stocking rates will also require development and implementation of an Allotment Management Plan (AMP). The AMP will incorporate similar grazing strategies currently being implemented and variable numbers for stocking rates that can fluctuate with drought conditions while not jeopardizing good stewardship and economic viability. More specific solutions exist for achieving desired conditions related to riparian recovery and more effective livestock management to achieve these objectives. These include:

1) Continue emphasizing riparian recovery objectives within pastures designated as "riparian" pastures, such as Indian and Mud Springs. Pasture distribution fencing (2.5 miles) proposed west of Indian Creek will create the Indian Riparian pasture, and reduce trailing and chronic return of livestock into Indian Creek when livestock are grazed in South Pasture (see attached map Indian Creek).
2) Continue exclusion of the 5 mile Blue River corridor and the 1 mile of lower Johnson Canyon within the new AMP. This will ensure continued recovery of the Blue River corridor as well as the perennial tributary Johnson Creek.
3) Using small segments of fencing (.7 miles) and natural rock cliff barriers, isolate and protect critical perennial water sources in both Indian and Cienega Creeks. These fence segments will be built in such a way as to allow for access lanes to water on hardened sites (e.g slick rock pool), and to allow for established trail access to move livestock into and out of pastures (see attached map Upper Cienega Creek).
4) Reconstruct the pasture division fence (.9 miles) between Roan Cow Pasture and South Pasture on the east side of Cienega Canyon to compliment proposed exclosures to ensure that cattle cannot access the protected area. This will be accomplished through Forest Service materials, permittee labor (shown on Upper Cienega Creek Map).
5) To increase the amount of woody debris component missing in all drainages for proper function, designate and fall identified invasive species into specific pinch point locations. Field inspections have identified several opportunities where a limited amount of falling can strategically place wood debris that will wedge into channels and help trap sediments to increase deposition. Proper placement of trees and woody debris will also discourage trailing and travel of livestock within drainages, extending areas of protection using natural barriers rather than expensive fencing (See attached maps for Wildbunch, Upper Cienega, Indian Creek).

6) In conjunction with the grazing permittee, University of Arizona Extension, and Forest Service range, riparian, and biological specialists, finalize a monitoring plan that documents success of proposed solutions as identified in 2) – 4) in accomplishing objectives for riparian restoration. Standard methodologies will be used to document actions to resolve solutions, as well as existing baseline conditions and incremental changes over 1-5-10 year periods at a minimum.

Photographic examples of debris jams created using local trees to felled to initiate woody debris establishment in an ephemeral system. Note the establishment of riparian woody species following one or two years of effective high flows followed by rest from ungulate grazing.

Re-establishment of riparian woody species following deposition of fines downstream and upstream of large woody debris jams created in Upper Sheep Wash.

Statement of Project Years of Benefit

Restoration of natural and self-maintaining but dynamic riparian systems often takes many years to achieve. Fully functional conditions cannot be realistically achieved unless out of the box measures are used to add back components that take decades to develop. Some immediate benefits are expected from fencing and adding woody debris, by simple protection from impacts of livestock even if occurring during dormant seasons. Benefits should become very observable within 1-3 years with expected deposition and establishment of woody and herbaceous species. Woody debris jams are expected to remain in place for at least a 10 year period when increased woody tree density will take over this initial role. Effects of effective grazing management will certainly be expected to last for the term of the permit, 10 years, but as recovery and stabilization builds on progress, these beneficial effects are expected to extend well into two decades and longer.

Project Location & Environmental Contaminant Information
FY 2009

Project Location Information			
1. County: Greenlee	2. Section: 33, 34 4,5,11,13,14,23,24	3. Township: T1S T2S	4. Range: 31E

5. Watershed: Upper Gila River

6. Name of USGS Topographic Map where project area is located: Fritz Canyon, Maple Peak

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: Carl and Martha Cathcart - Term Grazing Permittees

9. Current land use of project area: Livestock grazing, recreation

10. Size of project area (in acres): Allotment - 24,000 acres; Total affected riparian acres 50

11. Stream Name: Wildbunch Canyon, Mud Springs canyon, Upper Cienega Creek, Indian Creek

12. Length of stream through project area: Wildbunch - 2 miles; Mud Springs - 1 mile; Cienega Creek - 2 miles; Indian creek - 3 miles; Total affected stream/drainage miles - 8.

13. Miles of stream benefited: 8 miles

14. Acres of riparian habitat: 50 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:

Drive north from Clifton/Morenci on Highway 191 about 25 miles, to Forest Road 475 junction just north of Trail Cabin and Upper Eagle Creek road. Turn east, drive 12 miles to the Blue River, cross the Blue on FR 475 about 4 miles, you will cross Wildbunch canyon. Access to Wildbunch/Mud Springs is by horseback or foot travel on a Forest Service trail. Those portions of Wildbunch and Mud Springs canyon being treated are about 1.5 miles from roadway. To reach Cienega canyon and Upper Cienega Spring, continue traveling east on FR 475 (4X4 is required past private lands owned by Cathcarts), continue another 4 miles to Cienega Cabin. Cienega intermittent riparian and Cienega excluded spring is about 1 mile upcanyon, accessible by foot or horseback only. To reach Indian creek, continue traveling east on FR 475 for another 6 miles, until you come to the boundary fence between Copperas and Wildbunch allotment. Park and walk south into Oak Creek canyon, down 1.5 miles to the junction with Indian. Take the right canyon fork, and upstream for about 1.5 miles is perennial and intermittent riparian springs and a corridor that are targeted for treatments for restoration.

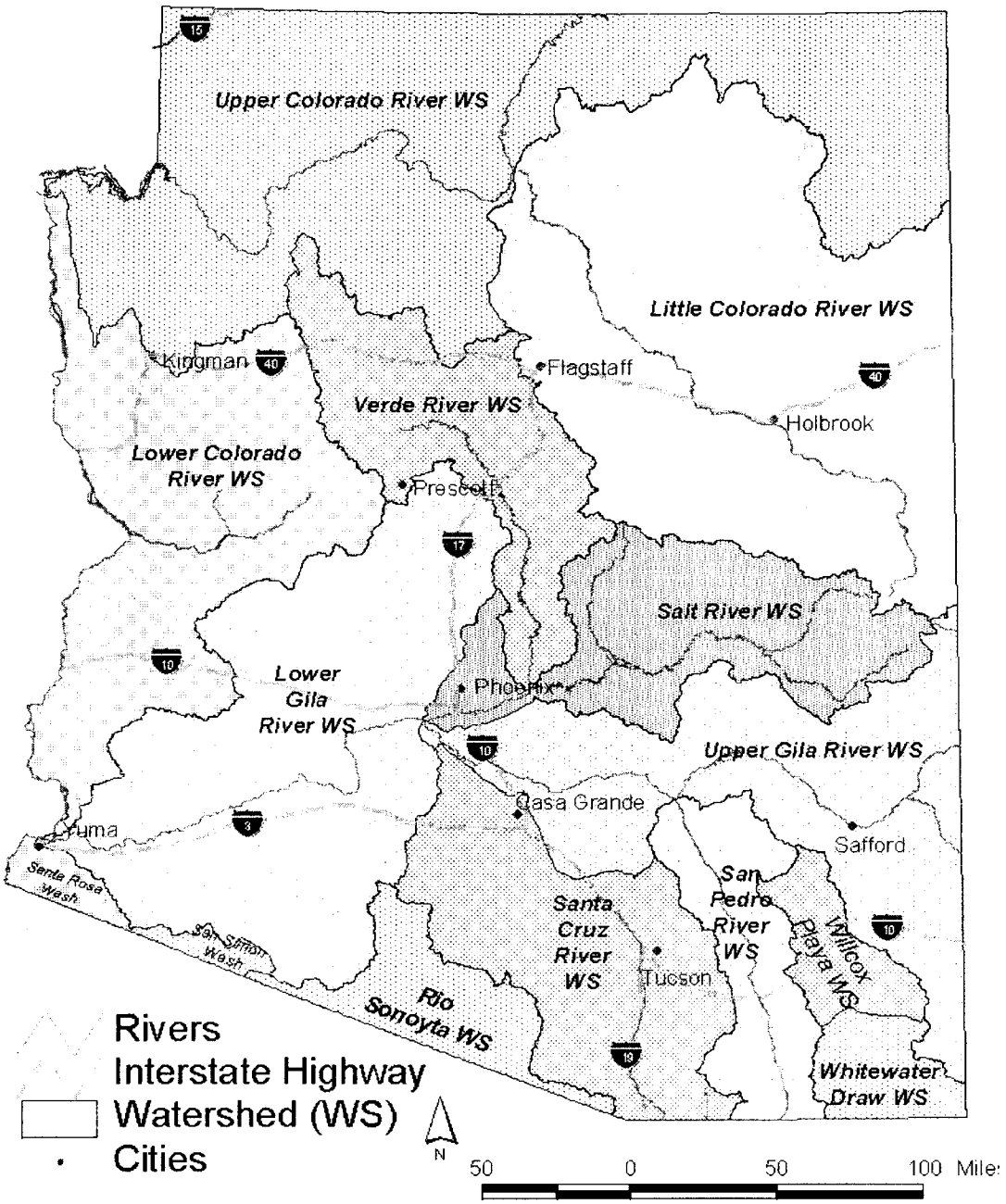
Environmental Contaminant Location Information

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:
   •

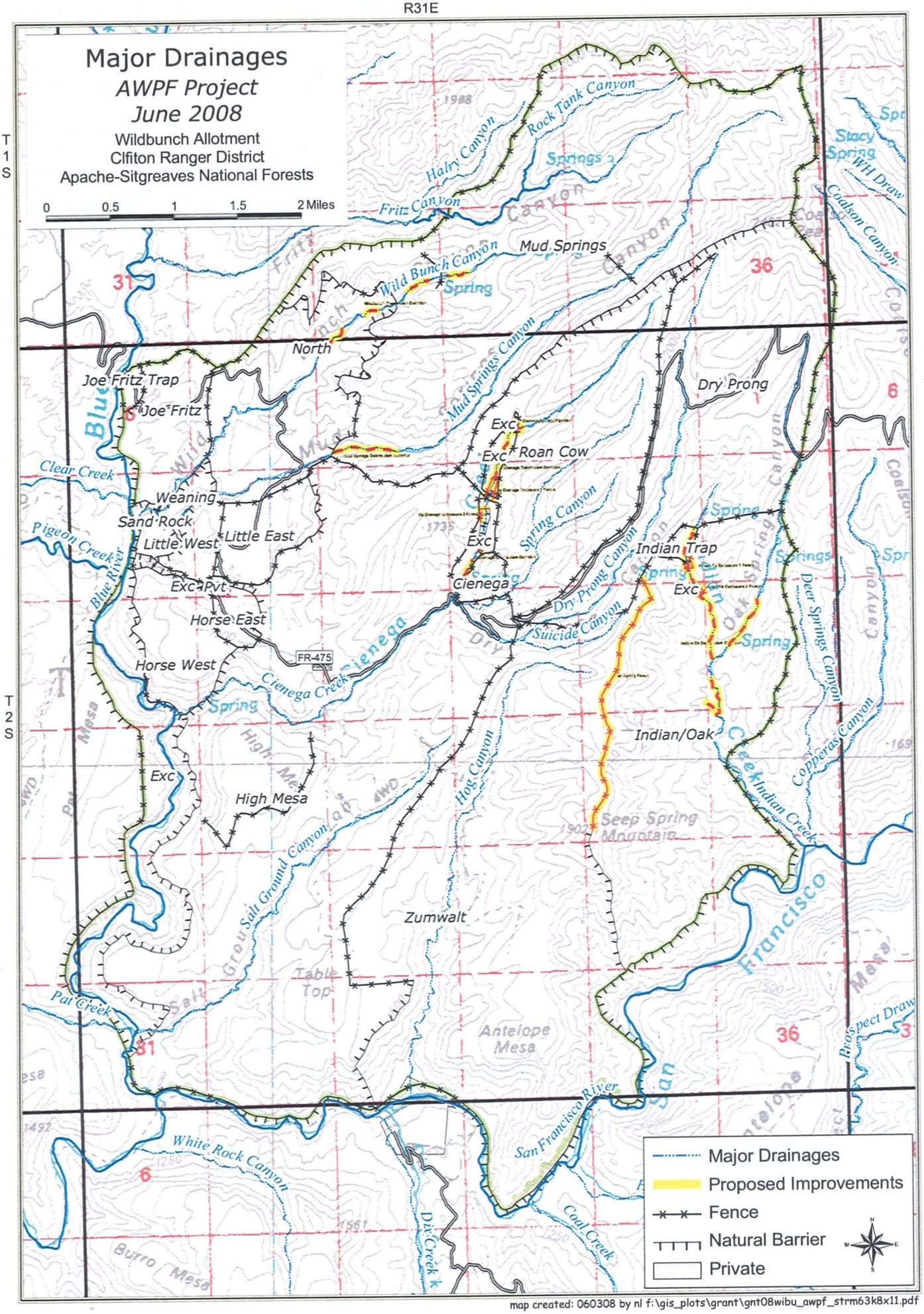
2. Are there known environmental contaminants in the project vicinity? ☐**YES** ☒**NO** If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:
   •

3. Are you asking for Arizona Water Protection Fund monies to identify whether or not environmental contaminants are present? ☐**YES** ☒**NO**

Arizona Watershed Map
FY 2009



Title of Project: Wildbunch Allotment Riparian Restoration


R31E
Major Drainages
AWPF Project
June 2008
Wildbunch Allotment
Clfiton Ranger District
Apache-Sitgreaves National Forests
0 0.5 1 1.5 2 Miles
T 1 S
T 2 S
Halry Canyon
Rock Tank Canyon
Springs
Stacy Spring
WH Draw
Coalson Canyon
Fritz Canyon
Mud Springs
Wild Bunch Canyon
Spring
North
Joe Fritz Trap
Joe Fritz
Mud Springs Canyon
Dry Prong
Exc
Roan Cow
Clear Creek
Weaning
Sand Rock
Little West
Little East
Pigeon Creek
Blue River
Exc Pvt
Horse East
Horse West
FR-475
Cienega
Cienega Creek
Spring Canyon
Dry Prong Canyon
Indian Trap
Deer Springs Canyon
Suicide Canyon
Indian/Oak
Copperas Canyon
Indian Creek
Seep Spring
Hog Canyon
High Mesa
Exc
Zumwalt
Grou Salt Ground Canyon
Table Top
Antelope Mesa
San Francisco River
Pat Creek
White Rock Canyon
Burro Mesa
Dix Creek
Coal Creek
Prospect Draw
Major Drainages
Proposed Improvements
Fence
Natural Barrier
Private
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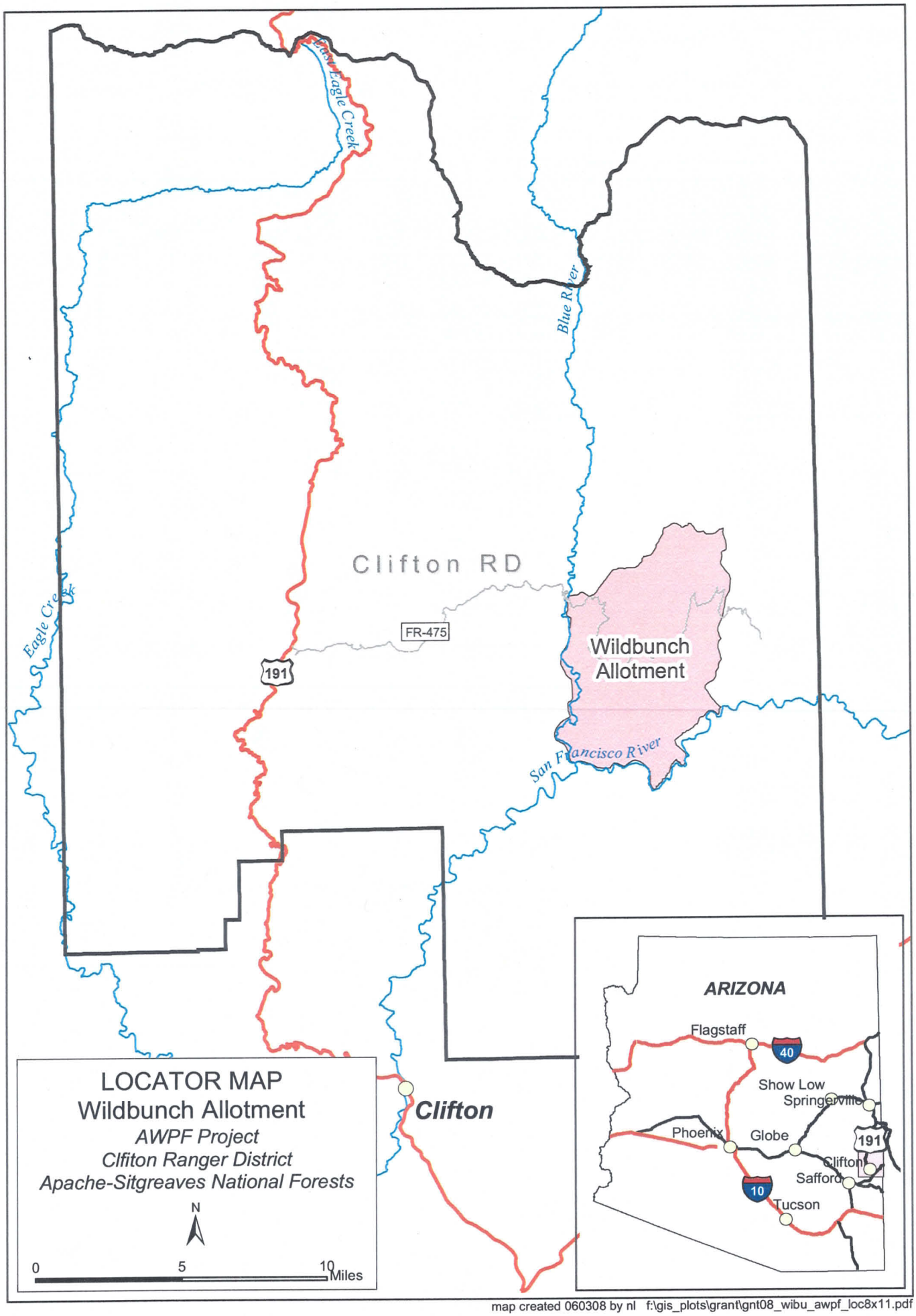

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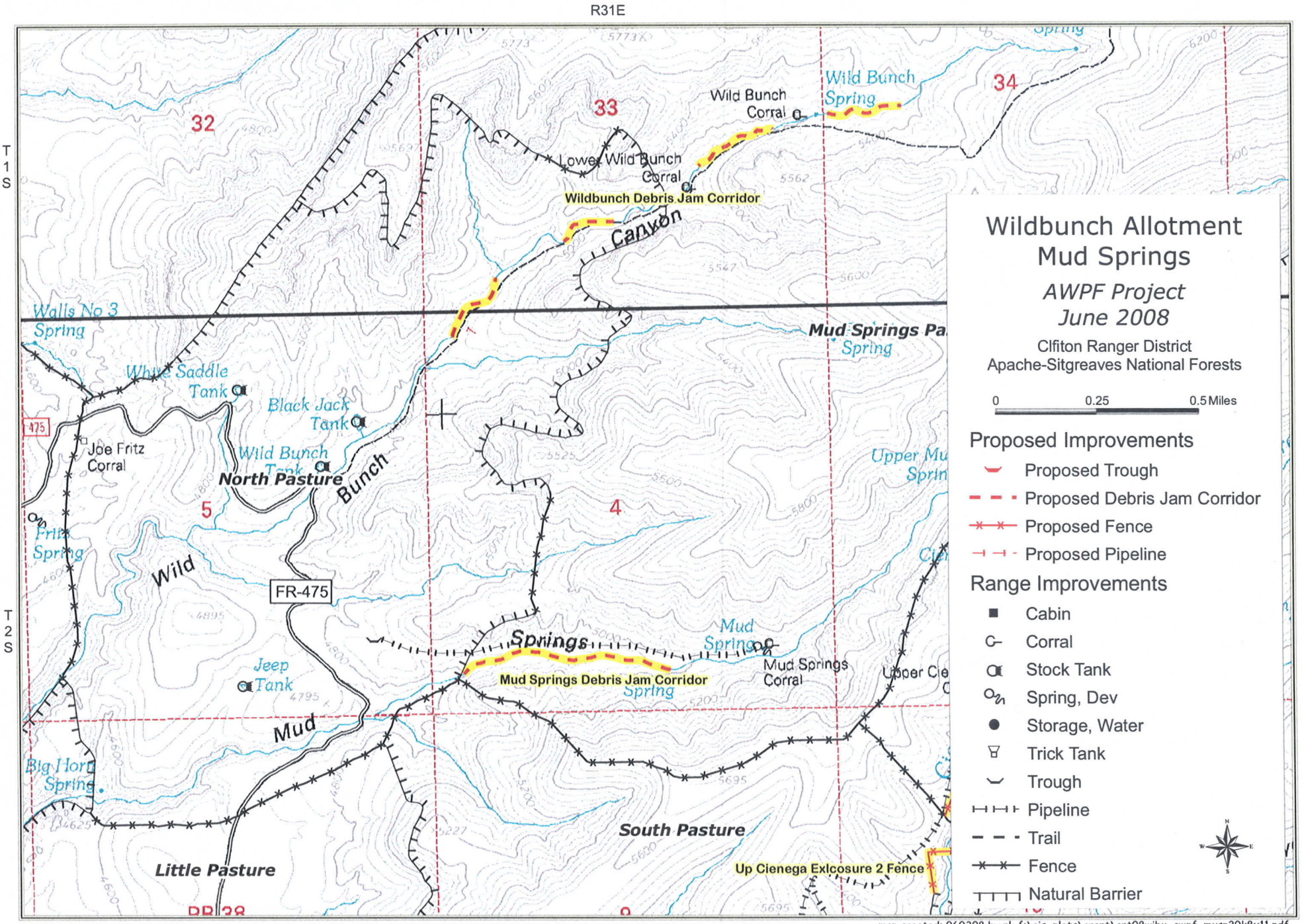

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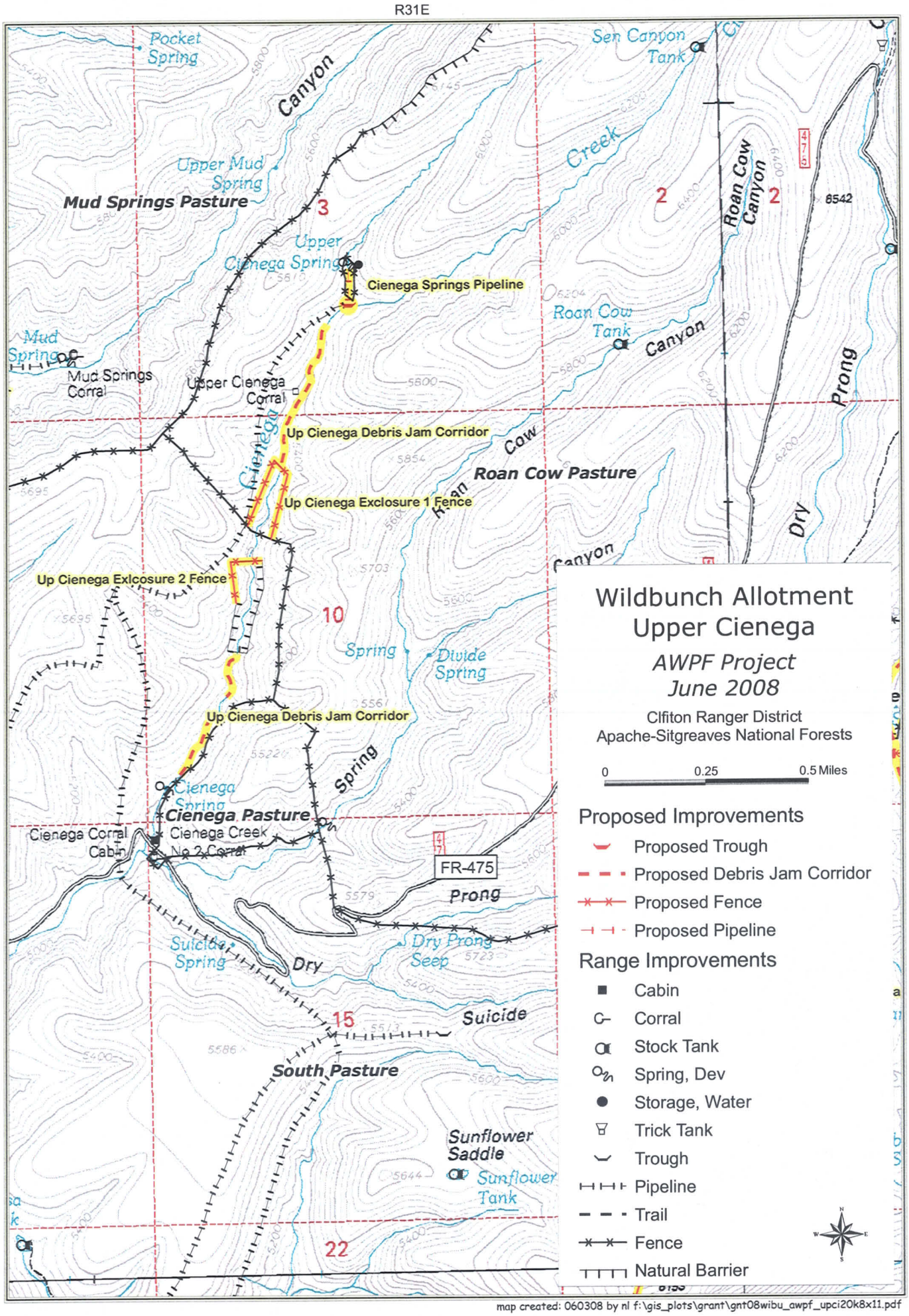

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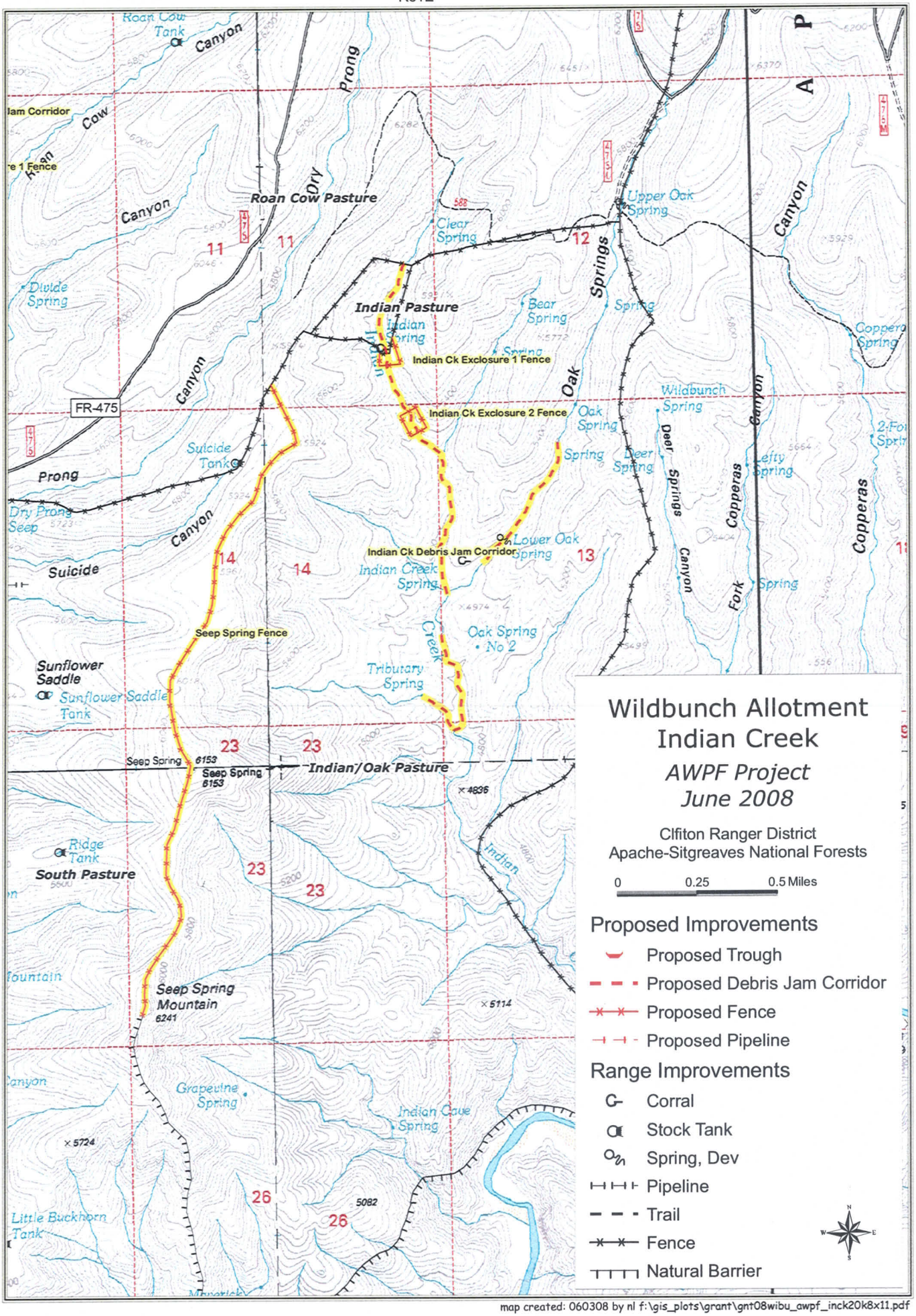
R31E

T 2 S



Wildbunch Allotment
Indian Creek

AWPF Project
June 2008

Clfiton Ranger District
Apache-Sitgreaves National Forests

0 0.25 0.5 Miles

Proposed Improvements

- Proposed Trough
- Proposed Debris Jam Corridor
- Proposed Fence
- Proposed Pipeline

Range Improvements

- Corral
- Stock Tank
- Spring, Dev
- Pipeline
- Trail
- Fence
- Natural Barrier

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SCOPE OF WORK

Task #1: Permits, Authorizations, Clearances, and Permit Modifications.

Task Description: Conduct archeological surveys and prepare reports; prepare Permit Modifications for fencing projects for permittee approval and District Ranger concurrence. Copies of all reports, maps, Permit Mods, other clearance documents will be provided to the project manager. Completion of archeological clearances and Permit Modifications are required by Forest Service before any ground work is initiated.
Task Purpose: Comply with NEPA decision and all appropriate laws for construction of fencing.

Deliverable Description:
(1) SHPO clearance including archeological surveys
(2) Permit Modification for all fence construction

Deliverable Due Dates:
(1) Prior to any ground – disturbing activities

AWPF Reimbursable Cost: $2,373.26 (includes 5% administrative costs)
Matching Funds: $14,172.50

Task #2: Implementation Plan

Task Description: Grantee and partners will prepare an implementation Plan outlining various phase and expectations of project design and implementation, including:

- **Woody Debris Site Placement Plan** Forest Service specialists (biologist, riparian specialist, hydrologist, District Ranger) will assess and specify potential trees for falling into various drainages on Wildbunch to enhance woody debris within designated riparian corridors and to reduce trailing and access to riparian corridors in Wildbunch, Mud Springs, Cienega, and Indian Creeks
- **Indian- South Pasture Division Fence Plan**
- **Indian and Cienega Creek Exclosures and Roan Cow /South Pasture Existing Division Fence Plan**
- **Monitoring Plan**
- **Education and Outreach Plan**

Task Purpose: A well-documented plan to ensure correct design and proper installation of improvements, an effective monitoring and education and outreach plan.
Deliverable Description: Copies of Woody Debris Site Placement Plan, Indian- South Pasture Division Fence Plan, Indian and Cienega Creek Exclosures and Roan Cow /South Pasture Existing Division Fence Plan, Monitoring Plan, and Education and Outreach Plan

Deliverable Due Dates: December 1, 2009.
AWPF Reimbursable Cost: $1,428.26 (includes 5% administrative costs)
Matching Funds: $14,172.50

Task #3: Implement Woody Debris Site Placement Plan

Task Description: Forest Service specialists (biologist, riparian specialist, hydrologist, District Ranger) assess potential trees for falling into various drainages on Wildbunch to enhance woody debris within designated riparian corridors and to reduce trailing and access to riparian corridors in Wildbunch, Mud Springs, Cienega, and Indian Creeks. Force account crew will fall trees with oversight provided by Forest Service fallers, and Forest riparian specialist. Coordination with permittee to ensure trails used for moving livestock into and out of pastures, or Forest Service designated trails, are left open.
Task Purpose: Increase woody debris availability within drainages that are lacking large wood for creating natural debris jams that can result in deposition of materials, establishment of riparian vegetation, and increase saturation capacity of riparian corridor. Reduce or eliminate travel within many section of riparian corridor during use periods by cattle without expensive, and difficult to maintain fencing.

Deliverable Description:

(1) Project Implementation Plan including maps as identified (4) above, and before photos of trees to be removed photo points of locations for placement.
(2) Progress reports. Actual felling is planned in phases, with Indian Creek as priority, Cienega next, Wildbunch/Mud Springs last based on funding and availability/timing of force account crews. Progress reports to include photos before and after, upstream/downstream in riparian corridor.
(3) Final reports following completion of debris jam placement in each major drainage system.

Deliverable Due Dates:

(1) Prior to any actual felling, expect December 1, 2008.
(2) Following completion of each phase or section of work in a major drainage
    a. Indian – estimated March 1, 2010
    b. Cienega – estimated May 1, 2010
    c. Wildbunch – estimated October 1, 2010

(3) Following completion of debris jam placement, inclusive with effects from summer monsoon flows. Estimate October 1, 2010.

AWPF Reimbursable Cost: $34,129.20 (includes 5% administrative costs)
Matching Funds: $12,562

Task #4: Implement Indian- South Pasture Division Fence Plan

Task Description: Construction of 2.5 miles of standard 4-wire fencing to Forest Service Specifications. Forest Service purchase materials, including steel brace material and concrete; provide oversight for helicopter operations to fly materials into location, confirmation of fence construction to standards. Permitee assist with location of drop sites, oversight and logistical support of fence contract crew to ensure fence is

constructed to specifications, photo documentation of progress in construction, and long term maintenance of fence as requirement of Term Grazing Permit.
Task Purpose: Construction of fence will enable isolation of Indian Creek as a separate, manageable pasture for riparian recovery, consistent with the NEPA decision and current management emphasis. The fence will prevent cattle from drifting back into Indian creek when relocated into South Pasture, or from South pasture during summer months. The fence will improve the efficiency of gathering and removal of livestock from Indian creek.

Deliverable Description:

(1) Purchase of fence materials for project – Invoices confirming FS purchase of
materials.
(2) Air Operations Plan for helicopter delivery of materials, including maps of GPS coordinates for drop sites.
(3) Contract with Helicopter for delivery of materials
(4) Contract with Fence construction contractor
(5) Final report including photos of construction activity and completed fence, copies of invoices for materials, documentation of labor costs, documentation of helicopter and crew activity, etc.

Deliverable Due Date:

(1) Following formal contract approval and signature of contract between Permittee and AWPF – expected by January 1, 2010.
(2) Estimated April 15, 2010.
(3) Estimated May 1, 2010
(4) Estimated May 1, 2010
(5) Estimated October 1, 2010

AWPF Reimbursable Cost: $79,868.25 (includes 5% administrative costs)
Matching Funds: $18,202.50

Task #5: Implement Indian and Cienega Creek Exclosures and Roan Cow /South Pasture Existing Division Fence Plan

Task Description: Construct exclosure fencing in Indian and Cienega Creeks to protect designated riparian and spring locations from livestock impacts. Forest Service purchase of materials. Anticipate fencing will be accomplished by same contractor is specified for Task #3. Materials flown in same time as Indian/South Pasture division fence, and drop sites included with same Air Operations plan. Reconstruction of Roan Cow/South Pasture existing fence is responsibility of permittee, but FS will purchase materials. Important part of ensuring exclusion of riparian areas in Cienega Creek.
Task Purpose: Isolate riparian corridor in very upper end of South pasture above Cienega cabin, and in very southwest corner of Roan Cow pasture. Fencing will provide lane into water at a hardened site in Cienega. Reconstruction of old existing fence on east side will ensure no drift of livestock occurs when Roan Cow pasture is being used.

Deliverable Description:

(1) Purchase of fence materials for project – Invoices confirming FS purchase of materials.
(2) Air Operations Plan for helicopter delivery of materials, including maps of GPS coordinates for drop sites.
(3) Contract with Helicopter for delivery of materials
(4) Contract with Fence construction contractor
(5) Final report including photos of construction activity and completed fence, copies of invoices for materials, documentation of labor costs, documentation of helicopter and crew activity, etc.

Deliverable Due Date:

(1) Following formal contract approval and signature of contract between Permittee and AWPF – expected by January 1, 2010.
(2) Estimated April 15, 2010.
(3) Estimated May 1, 2010
(4) Estimated May 1, 2010
(5) Estimated October 1, 2010

AWPF Reimbursable Cost: $25,924.50 (includes 5% administrative costs)
Matching Funds: $17,472.50

Task #6: Implement Monitoring Plan

Task Description: The Monitoring Plan will describe both implementation and effectiveness monitoring aspects of Tasks. Implementation monitoring documents actual construction or debris jam placement activities, and will generally be included in Progress or Final Reports documenting completion of work described. Effectiveness monitoring will use previous baseline surveys or data collected during Proper Functioning Surveys, or range analyses, or previous range inspections. Specific attention will be placed on documenting existing conditions of riparian corridor conditions using photo-points before and after fencing and debris jam placement. Additionally, a set of 5 temporary rain gauge stations will be placed strategically across the allotment within identified drainage areas targeted for improvement. The Plan will be inclusive as part of the Allotment Management Plan (AMP) for continued livestock grazing on the Wildbunch allotment. The Plan shall describe the specific monitoring schedule related to not only the effectiveness of these projects but other allotment related monitoring as well. The Permitee will be a participant in both development and implementation of the Plan, with guidance and direction from Forest Service Range and wildlife specialists, with additional recommendations from the Forest Riparian specialist and University of Arizona Extension Range Specialist, and members of the Upper Eagle Creek/Blue River Watershed Association. The Monitoring Plan will include at a minimum:

- Descriptions of aspects of monitoring and expectations/objectives in a narrative.
- Attributes to be measured and photo documented, and the frequency for sampling
- Map(s) that clearly show designated monitoring sites

- Description of monitoring sites and reasons for selection, including precipitation gauge locations.
- Protocols and methodologies for measuring attributes
- Sample data sheets and photo point record sheets
- Materials and equipment list
- Designation and list of persons responsible for monitoring, including Permittee.

The Monitoring Plan will be developed in draft as part of the completion of the AMP, and will be reviewed for concurrence by participating members as identified above, and including the Project Manager.

Task Purpose: Identify and ensure all partners in project implementation clearly understand the objectives for and expectations from monitoring effectiveness of proposed projects. Document for the record baseline information not only required by AWPF, but necessary to assess if projects and management of livestock are accomplishing expectations and meeting desired conditions as required by NEPA and the Forest Plan. Finally, to provide data and confirmation to help replan and adjust management of riparian resources on Wildbunch allotment as needed throughout the duration of AMP implementation.

Deliverable Description:
(1) Monitoring Plan with section specifically identified for AWPF
Deliverable Due Date: (1) December 1, 2009

AWPF Reimbursable Cost: $4,522.35 (includes 5% administrative costs)
Matching Funds: $15,817.00

Task #7: Implement Education and Outreach Plan

Task Description: Fencing to protect riparian resources is a common practice across western rangelands where livestock are grazed, and often believed the only answer to recovering lost plant diversity and increasing function during high water flows. This proposal combines conventional techniques such as fencing, but also includes an "out of the box" technique seldom used and less seldom understood, that of adding natural debris into a channel system to develop meandering, increase deposition, and encouraging seedling and herbaceous establishment in drainages lacking roughness and woody material. It has been used on Clifton Ranger District for several years, with success, in re-establishing riparian vegetation in the Upper Sheep Wash drainage, and the principals applied across the District generally with road maintenance practices on Upper Eagle creek and the Forest Road 475 crossing of the Lower Blue River.

In addition, these practices are being applied in at least two instances within pastures that have been, are being managed for, and will continue to be grazed primarily during dormant seasons. Unlike the debris jam concept, his grazing practice has been implemented on Clifton Ranger District as well as many areas across western states with great success.

The combination of practices, and anticipated success at recovering riparian areas on the Wildbunch Allotment, we believe will be of importance to share through several avenues. While the remoteness of the Wildbunch Allotment and the projects themselves makes it unlikely that field days can be hosted, there are several other avenues that can be used to "spread the word of success". Organizations such as the Gila Watershed Partnership newsletters and workshops, newsletters from the Upper Eagle Creek Watershed Association and presentations, possibly University of Arizona Extension newsletters and brochures are just a few options to provide documentation of success and lessons learned. Digital imagery now provides excellent pictorials for power point presentations.
Task Purpose: To provide educational information and examples of the use of various practices to aide in restoration of small but valued riparian areas within a semi-desert and Madrean evergreen woodland grassland vegetation communities. Education and outreach materials and presentations will be directed at both practitioners on land and agency and academic personnal.

Deliverables Description:

(1) Newsletter articles
(2) Power point presentations
(3) CD with a summary of all educational materials, including results of monitoring used as an educational tool.

Deliverable Due Date:

(1)-(3) Upon completion of combined project work, such as fencing and debris jams in Upper Cienega Creek.

AWPF Reimbursable Cost: $6,084.75 (includes 5% administrative costs)
. Matching Funds: $5,205.00

Task #8: Final Project Reports

Task Description: Preparation of progress and final accomplishment report for completion of project. Narrative will include a summary of various Tasks accomplished within Project design, with a discussion about success and lessons learned. Because there is a need to include results from the first monsoon season of potential flows, the final report is planned of course upon project completion but also allowing time for results during summer and fall growth.

The Grantee will work closely with the Forest Service and Project Manager in preparation of both progress and the Final Report, primarily in obtaining implementation and effects monitoring data such as photo points of work completion, and precipitation data.
Task Purpose: Document results of implementation and effectiveness of the project in meeting designed and expected objectives, including resource objectives, land management expectations, budget management, and education and outreach activities.

Deliverable Description:

(1) Progress Reports
(2) Final Report

Deliverable Due Date:
(1) Upon completion of Tasks or phases within a Task, such as fencing.
(2) Upon completion of all projects, including initial effectiveness monitoring results, expected by December 1, 2010.

AWPF Reimbursable Cost: $6,930.00 (includes 5% administrative costs)
Matching Funds: $5,825.00

WILDBUNCH ALLOTMENT RIPARIAN RESTORATION DETAILED AWPF BUDGET BREAKDOWN				
TASK 1				
Permits, authorizations and clearances	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Forest Archeologist	4	day	$ 300.00	$ 1,200.00
Gila Watershed Coordinator	16	hrs	$ 65.00	$ 1,040.00
Subtotal				**$ 2,240.00**
OTHER DIRECT COSTS				
Copies and mailings	5	mailings	$ 4.05	$ 20.25
Subtotal				**$ 20.25**
Task Subtotal				**$ 2,260.25**
Administration Costs (5%)				**$ 113.01**
TASK TOTAL				**$ 2,373.26**

TASK 2				
Implementation Plan	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Forest Archeologist	1	day	$ 300.00	$ 300.00
Gila Watershed Coordinator	16	hrs	$ 65.00	$ 1,040.00
Subtotal				**$ 1,340.00**
OTHER DIRECT COSTS				
Copies and mailings to Grantor	5	mailings	$ 4.05	$ 20.25
Subtotal				**$ 20.25**
Task Subtotal				**$ 1,360.25**
Administration Costs (5%)				**$ 68.01**
TASK TOTAL				**$ 1,428.26**

TASK 3				
Woody Debris Site Assessment and Placement of Debris Jams	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Forest Riparian Specialist	10	day	$ 300.00	$ 3,000.00
Force Account Crew (4 @ $200/day= $800 per day)	20	day	$ 800.00	$ 16,000.00
Force Account Crew Supervisor	25	day	$ 250.00	$ 6,250.00
Gila Watershed Coordinator	16	hrs	$ 65.00	$ 1,040.00
Subtotal				**$ 26,290.00**
OTHER DIRECT COSTS				
Digital flash card and CD's	4	ea	$ 8.00	$ 32.00
Saw parts (gas, chain, sprockets, etc)	1	Unit	$ 300.00	$ 300.00
Chain saw maintenance	1	Unit	$ 400.00	$ 400.00
Chain Saw replacement (Stihl 044)	1	ea	$ 450.00	$ 450.00
Vehicle mileage and FOR (vehicle)	2000	miles	$ 0.50	$ 1,000.00
Vehicle FOR Maintenance cost	1	month	$ 250.00	$ 250.00
Meals for crew	25	days	$ 150.00	$ 3,750.00
Flagging	1	box	$ 12.00	$ 12.00
Copies and mailings to Grantor	5	mailings	$ 4.00	$ 20.00
Subtotal				**$ 6,214.00**

Task Subtotal				**$ 32,504.00**
Administration Costs (5%)				**$ 1,625.20**
TASK TOTAL				**$ 34,129.20**

TASK 4				
Construct Division Fencing	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Fence Contractor (Cost)	13,200	Linear foot	$3.75	$ 49,500.00
Helicopter managers (3 person crew @ $500 for crew)	3	day	$ 500.00	$ 1,500.00
Gila Watershed Coordinator	16	hrs	$ 65.00	$ 1,040.00
Subtotal				**$ 52,040.00**
OTHER DIRECT COSTS				
Materials purchased by FS as Match				
Helicopter Contract costs (Flight time)	16	hour	$ 1,200.00	$ 19,200.00
Helicopter Contract (Fuel truck costs)	700	mile	$ 4.75	$ 3,325.00
Helicopter support truck (crew)	400	mile	$ 0.50	$ 200.00
Travel and per diem Helo crew (3 @ $30/day)	2	day	$ 90.00	$ 180.00
Steel brace posts for fence corners (sets of 3 @$80/set, with cement)	14	set	$ 80.00	$ 1,120.00
Subtotal				**$ 24,025.00**
Task Subtotal				**$ 76,065.00**
Administration Costs (5%)				**$ 3,803.25**
TASK TOTAL				**$ 79,868.25**

TASK 5				
Construct Exclosure fences	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Fence Contractor (Cost for Exclosures only)	4,224	Linear foot	$ 3.75	$ 15,840.00
Helicopter managers (3 person crew @ $500 for crew)	1	day	$ 500.00	$ 500.00
Gila Watershed Coordinator	4	hrs	$ 65.00	$ 260.00
Subtotal				**$ 16,600.00**
OTHER DIRECT COSTS				
Helicopter Contract costs (Flight time)	6	hour	$ 1,200.00	$ 7,200.00
Travel and per diem Helo crew (3 @ $30/day)	1	day	$ 90.00	$ 90.00
Steel brace posts for fence corners (sets of 3 @$80/set, with cement)	10	set	$ 80.00	$ 800.00
Subtotal				**$ 8,090.00**
Task Subtotal				**$ 24,690.00**
Administration Costs (5%)				**$ 1,234.50**
TASK TOTAL				**$ 25,924.50**

TASK 6				
Implement Monitoring Plan	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				

Gila Watershed Coordinator	40	hrs	$ 65.00	$ 2,600.00
Subtotal				**$ 2,600.00**
OTHER DIRECT COSTS				
Rain gauges for major drainages (2 Wildbunch/Mud Springs, 1 Upper Cienega, 2 Indian)	5	ea	$ 150.00	$ 750.00
Digital Camera	1	ea	$ 800.00	$ 800.00
Copies of Forms, Guidelines	250	.page	$ 0.20	$ 50.00
Flash Card/CD's	4	ea	$ 8.00	$ 32.00
Misc. Materials	1	unit	$ 75.00	$ 75.00
Subtotal				**$ 1,707.00**
Task Subtotal				**$ 4,307.00**
Administration Costs (5%)				**$ 215.35**
TASK TOTAL				**$ 4,522.35**

TASK 7				
Education and Outreach	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Gila Watershed Coordinator	80	hrs	$ 65.00	$ 5,200.00
Subtotal				**$ 5,200.00**
OTHER DIRECT COSTS				
Copies of Forms, Guidelines	600	.page	$ 0.20	$ 120.00
Flash Card/CD's	10	ea	$ 8.00	$ 80.00
Misc. Materials	1	unit	$ 75.00	$ 75.00
Binding Materials	1	unit	$ 120.00	$ 120.00
Mail outs for articles and newsletters	50	mailings	$ 4.00	$ 200.00
Subtotal				**$ 595.00**
Task Subtotal				**$ 5,795.00**
Administration Costs (5%)				**$ 289.75**
TASK TOTAL				**$ 6,084.75**

TASK 8				
Final Report	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Gila Watershed Coordinator	80	hrs	$ 65.00	$ 5,200.00
Subtotal				**$ 5,200.00**
OTHER DIRECT COSTS				
Copies of Reports, color photos	800	.page	$ 1.00	$ 800.00
Flash Card/CD's	10	ea	$ 8.00	$ 80.00
Binding Materials for reports	1	unit	$ 120.00	$ 120.00
Mail outs to AWPF, Partners	100	ea	$ 4.00	$ 400.00
Subtotal				**$ 1,400.00**
Task Subtotal				**$ 6,600.00**
Administration Costs (5%)				**$ 330.00**
TASK TOTAL				**$ 6,930.00**

TOTAL AWPF FUNDS	**$ 161,260.58**

WILDBUNCH ALLOTMENT RIPARIAN RESTORATION DETAILED MATCHING BUDGET BREAKDOWN				
TASK 1				
Permits, authorizations and clearances	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
District Ranger	6	day	$ 300.00	$ 1,800.00
Range Management Specialists	10	day	$ 250.00	$ 2,500.00
District Biologist	5	day	$ 250.00	$ 1,250.00
Para Archeologists	15	day	$ 250.00	$ 3,750.00
GIS specialist	2	day	$ 250.00	$ 500.00
Resource Asst	4	day	$ 150.00	$ 600.00
Permittee	15	day	$ 200.00	$ 3,000.00
Subtotal				**$ 13,400.00**
OTHER DIRECT COSTS				
Copies for Project Manager	250	page	$ 0.15	$ 37.50
FS vehicle mileage	500	mile	$ 0.45	$ 225.00
Travel and Per diem – field rate	20	day	$ 20.00	$ 400.00
Map copy paper	30	page	$ 1.00	$ 30.00
Mailings	20	mailouts	$ 4.00	$ 80.00
Subtotal				**$ 772.50**
TASK TOTAL				**$ 14,172.50**

TASK 2				
Implementation Plan	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
District Ranger	6	day	$ 300.00	$ 1,800.00
Range Management Specialists	10	day	$ 250.00	$ 2,500.00
District Biologist	5	day	$ 250.00	$ 1,250.00
Para Archeologists	15	day	$ 250.00	$ 3,750.00
GIS specialist	2	day	$ 250.00	$ 500.00
Resource Asst	4	day	$ 150.00	$ 600.00
Permittee	15	day	$ 200.00	$ 3,000.00
Subtotal				**$ 13,400.00**
OTHER DIRECT COSTS				
Copies for Project Manager	250	page	$ 0.15	$ 37.50
FS vehicle mileage	500	mile	$ 0.45	$ 225.00
Travel and Per diem – field rate	20	day	$ 20.00	$ 400.00
Map copy paper	30	page	$ 1.00	$ 30.00
Mailings	20	mailouts	$ 4.00	$ 80.00
Subtotal				**$ 772.50**
TASK TOTAL				**$ 14,172.50**

TASK 3				
Woody Debris Site Assessment and Placement of Debris Jams	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
District Ranger	5	day	$ 300.00	$ 1,500.00
Range Management Specialist	5	day	$ 250.00	$ 1,250.00
Recreation/Trails Staff	10	day	$ 250.00	$ 2,500.00

GIS Specialist	1	day	$ 250.00	$ 250.00
Para archeologist	5	day	$ 250.00	$ 1,250.00
Terrestrial Biologist	5	day	$ 250.00	$ 1,250.00
Fisheries Biologist	5	day	$ 250.00	$ 1,250.00
Permittee	5	day	$ 200.00	$ 1,000.00
Subtotal				**$ 10,250.00**
OTHER DIRECT COSTS				
Digital flash card and CD's	4	ea	$ 8.00	$ 32.00
FS Vehicle mileage	800	miles	$ 0.50	$ 400.00
Travel and perdiem (field rate)	40	days	$ 20.00	$ 800.00
Copies and mailings to Project Mgr	20	mailings	$ 4.00	$ 80.00
Horse Feed (40 use days)	40	Horse day	$ 25.00	$ 1,000.00
Subtotal				**$ 2,312.00**
TASK TOTAL				**$ 12,562.00**

TASK 4				
Construct Division Fencing	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Range Management Specialist	10	day	$ 250.00	$ 2,500.00
Permittee	30	day	$ 200.00	$ 6,000.00
District Ranger	1	day	$ 300.00	$ 300.00
GIS specialist	1	day	$ 250.00	$ 250.00
Resource Asst	1	day	$ 150.00	$ 150.00
Subtotal				**$ 9,200.00**
OTHER DIRECT COSTS				
Standard Fence Materials for 2.5 miles (posts, wire, tie wire, clips, metal stays)	2.5	mile	$ 3,200.00	$ 8,000.00
FS vehicle mileage	450	mile	$ 0.45	$ 202.50
Travel and perdiem (field rate)	5	day	$ 20.00	$ 100.00
Horse Feed (use days)	20	Horse days	$ 25.00	$ 500.00
Misc. Hardware for rigging sling loads for helicopter operations	1	Unit	$ 200.00	$ 200.00
Subtotal				**$ 9,002.50**
TASK TOTAL				**$ 18,202.50**

TASK 5				
Construct Exclosure fences	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Range Management Specialist	10	day	$ 250.00	$ 2,500.00
Permittee	35	day	$ 200.00	$ 7,000.00
District Ranger	1	day	$ 300.00	$ 300.00
District biologist	2	day	$ 250.00	$ 500.00
GIS specialist	1	day	$ 250.00	$ 250.00
Resource Asst	1	day	$ 150.00	$ 150.00
Subtotal				**$ 10,700.00**
OTHER DIRECT COSTS				
Standard Fence Materials for 2.5 miles (posts, wire, tie wire, clips, metal stays)	1.6	mile	$ 3,200.00	$ 5,120.00
Metal brace materials (sets of 3 $80/set, with cement)	5	sets	$ 80.00	$ 400.00
FS vehicle mileage	450	mile	$ 0.45	$ 202.50

Field perdiem (field rate)	10	day	$ 20.00	$ 200.00
Horse Feed (use days)	20	Horse days	$ 25.00	$ 500.00
Misc. Hardware for rigging sling loads for helicopter operations	1	unit	$ 200.00	$ 200.00
Misc. fence materials (cable, clamps)	1	unit	$ 150.00	$ 150.00
Subtotal				**$ 6,772.50**
TASK TOTAL				**$ 17,472.50**

TASK 6				
Implement Monitoring Plan	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
Permittee	20	day	$ 200.00	$ 4,000.00
District Ranger	8	day	$ 300.00	$ 2,400.00
Range Management Specialist	15	day	$ 250.00	$ 3,750.00
Biologist	8	day	$ 250.00	$ 2,000.00
Forest Hydrologist	2	day	$ 250.00	$ 500.00
U of A Extension Specialist	4	day	$ 250.00	$ 1,000.00
District FS Resource Asst	1	day	$ 150.00	$ 150.00
District FS GIS specialist	2	day	$ 250.00	$ 500.00
Subtotal				**$ 14,300.00**
OTHER DIRECT COSTS				
FS vehicle mileage	300	mile	$ 0.45	$ 135.00
Travel and per diem (field rate)	5	day	$ 20.00	$ 100.00
Plotter paper and ink cartridges	1	unit	$ 300.00	$ 300.00
Digital Camera	1	ea	$ 800.00	$ 800.00
Flash Card/CD's	4	ea	$ 8.00	$ 32.00
Horse use	6	Horse day	$ 25.00	$ 150.00
Subtotal				**$ 1,517.00**
TASK TOTAL				**$ 15,817.00**

TASK 7				
Education and Outreach	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
District FS Range Management Specialist	5	day	$ 250.00	$ 1,250.00
District Ranger	5	day	$ 300.00	$ 1,500.00
District Resource Assistant	1	day	$ 150.00	$ 150.00
Permittees	8	day	$ 200.00	$ 1,600.00
Subtotal				**$ 4,500.00**
OTHER DIRECT COSTS				
FS Vehicle mileage	400	mile	$ 0.45	$ 180.00
Travel and per diem (conus)	5	day	$ 105.00	$ 525.00
Subtotal				**$ 705.00**
TASK TOTAL				**$ 5,205.00**

TASK 8				
Final Report	**AMT**	**UNIT**	**COST / UNIT**	**TOTAL COST**
DIRECT LABOR				
District Ranger	5	day	$ 300.00	$ 1,500.00
Permittee	6	day	$ 200.00	$ 1,200.00
Range Management Specialist	5	day	$ 250.00	$ 1,250.00

District Resource Assistant	2	day	$ 150.00	$ 300.00
GIS specialist	4	day	$ 250.00	$ 1,000.00
Subtotal				**$ 5,250.00**
OTHER DIRECT COSTS				
Copies of Reports, color photos	400	.page	$ 1.00	$ 400.00
GIS supplies	1	unit	$ 120.00	$ 120.00
Mail outs to Project Manager	25	ea	**$ 4.00**	$ 100.00
Subtotal				**$ 620.00**
TASK TOTAL				**$ 5,825.00**

TOTAL MATCHING FUNDS	**$ 103,429.00**

TOTAL AWPF AND MATCHINGFUNDS	**$ 264,689.58**

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: Wildbunch Allotment Riparian Restoration

3. Applicant Name and Address: Carl and Marty Cathcart

4. Current Land Owner/Manager(s): Carl and Marty Cathcart (USFS grazing permit holder)

5. Project Location, including Township, Range, Section: T1S, R31E 33, 34;
6. T2S, R31E 4, 5,11, 13, 14, 23, 24

7. Total Project Area in Acres (or total miles if trail): 50 acres, 4.1 miles debris jam corridors, 3.2 miles fence

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

9. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected: Standard 4 strand fencing for division fencing, and riparian exclosure fencing; several reaches where juniper and pinyon trees are felled into the drainage for woody debris jams. Little impacts are expected to occur as all work will be done by hand tools.

10. 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 undisturbed except from livestock uses.

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

12. 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

13. 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.

14. 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.

Applicant Signature /Date 6/6/08 Applicant Printed Name MARTY CATKAT

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: _____

City or Town: _____ ☐ Vicinity County: _____ Tax Parcel No.: _____

Township: _____ Range: _____ Section: _____ Quarters: _____ Acreage: 50 acre

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

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

USGS 7.5' quadrangle map: Fritz Canyon; Maple Peak

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 Timeline:

Wildbunch Riparian Restoration								
Timeline								
TASK		2009				2010		
1	Permits, Authorizations and clearances							
2	Implementation Plan							
3	Woody Debris Plan							
4	Division Fencing							
5	Exclosure Fencing							
6	Monitoring Plan							
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.

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.

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.

OAG

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

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

Dear Mr. Newman:

Please accept this letter in support of the Wildbunch Allotment Riparian Restoration grant being submitted by Carl and Marty Cathcart, livestock grazing permittees on the Clifton Ranger District. The Cathcart's have been managing the Wildbunch allotment under a Term Grazing Permit on the Clifton District since 1995 and in my professional opinion, have made great progress in improving livestock management and subsequently range and watershed conditions across the allotment. Through a trial grazing period over the last 7-8 years, Carl has developed a very good layman's sense of the importance of both key and critical areas where both upland and riparian recovery can occur. He and Marty clearly understand the need to ensure effective distribution of livestock, timing, and duration of grazing so that riparian areas have a chance to recover.

However, as much as ensuring that alternate water sources and rotational grazing is done to offset managed impacts, there comes a time when additional tools like fencing become critical to ensure resource objectives for use and recovery can be met. In the next month or so, the environmental assessment and decision will become final that will guide future livestock management for another 10 year term of the grazing permit. While this decision will provide for a reduction in permitted numbers, it also recognizes the need to retain good livestock stewardship on the land. Concurrent within the decision are several improvements to compliment ongoing management that is designed to significantly improve riparian conditions on intermittent drainages across the allotment.

As the District Ranger who has been involved with riparian management for many years, I realize how important both aquatic environments are across the Forest as well as across the southwest. Having been involved with management decisions related to this allotment for over a decade now, I have observed substantive improvement in recovery along the 5 mile stretch of the Blue River within the allotment. The Cathcart's have played a significant role in this improvement by ensuring livestock have remained out of this corridor since they were issued the permit in December, 2004. In addition, Carl has implemented a pasture grazing strategy that creates and uses two riparian pastures in an 18 month rotation that ensures complete recovery of impacted areas within the riparian corridor.

While this approach continues to have beneficial effects, particularly noted in upland conditions, it is now time to compliment these efforts with additional support through the proposals outlined in detail in their grant application. Because we feel strongly about helping make their efforts a success, the Clifton District has assisted the Cathcart's in the development and completion of their grant application and proposal, using information from the Environmental Assessment and other specialist reports. While I am confident the Cathcart's can articulate to members of the Commission the need and expectations of their grant application, please do not hesitate to contact me directly should there be questions concerning any aspect of those documents included as attachments.

Thank you in advance for the opportunity to provide support to the Cathcart's, and the continued efforts of the Commission in providing incentives to land stewards for ensuring recovery of the most valued of our resources in Arizona.

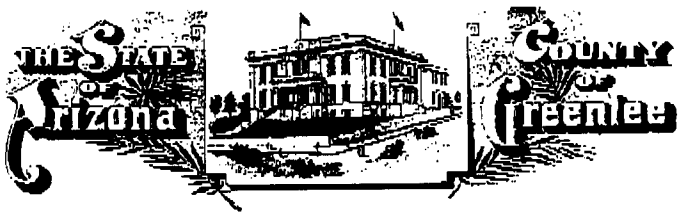
Sincerely,

FRANK A. HAYES
District Ranger

cc: Carl and Marty Cathcart

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

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 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 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

Specialist Report re: Riparian Resources

on Wildbunch Allotment

Clifton District, Apache-Sitgreaves National Forest, Arizona

U.S. Forest Service

Tom Subirge, Forest Riparian Coordinator

September 25th, 2006

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Introduction
Livestock grazing first began on the Wildbunch Allotment in the early 1880's. The current permittee, Carlyle and/or Martha A. Cathcart, has been issued a Term Grazing Permit for the Wildbunch Allotment since 12/6/1994. Please see the allotment EA (environmental assessment) for full details regarding permitted numbers, actual use and current allowable use. A summary of permitted numbers follows.

The current term grazing permit is for 311 cow/calf pairs from 03/01 to 02/28, 48 yearlings from 01/01 to 5/31, 35 head of yearling cattle from 01/01 to 10/31, and 8 head of horses from 03/01 to 02/28, annually, or 5,026 AUMs. Under a Memorandum of Understanding (MOU) dated 12/12/1995, the allowable stocking rate authorized on the Wildbunch Allotment was for 210 head of cattle or 3,084 AUMs (assuming 70% with calf and 30% without).

Actual Use: Since 2001 actual numbers of livestock has varied from 205 to 215 cows year-round and 8 horses seasonally (approx, 33% of the time) averaging 3,211 AUMs annually. Calves are born throughout the year.

The current allowable use guideline for all pastures is 35% during the growing period and 45% during dormant season use. Current management on the allotment consists of a deferred grazing system utilizing 8 pastures and 5 holding pastures or traps.

The Rescission Act of 1995 (Public Law 104-19) became law on July 27, 1995. In accordance with this law, a schedule for completing NEPA analysis was developed with this allotment initially being scheduled for completion in 2002. This report provides resource information regarding riparian resources within the area of the Wildbunch allotment.

Area of Analysis
The Wildbunch Allotment is located on the Clifton Ranger District of the Apache-Sitgreaves National Forests in Greenlee County, Arizona. The allotment includes 23,070 acres of which 23,055 acres are National Forest System Lands and 14.5 acres are private land. Browse, juniper savannah and woodland associations dominate vegetation types on the allotment.

The allotment boundary begins at the confluence of the Blue and San Francisco Rivers and continues north approximately 7 miles to just north of Wildbunch Canyon and Forest Road 475. From there it proceeds to the northeast following the ridgeline to Bullard Peak, turning south to Coalson Peak and continuing South to the San Francisco River. From there it continues westerly, downstream, along the San Francisco River until it reaches the point of beginning at the confluence of the Blue and San Francisco Rivers. Of the 8.7 perennial miles of streams on the allotment, 6.3 miles are closed to livestock use.

Key Resource Questions
Regarding riparian resources, key issues relate to riparian condition; whether or not lotic riparian areas, as well as spring source areas are at or anywhere near potential condition. Several T&E habitats (Threatened and Endangered Species) occur in conjunction with riparian habitat, within the Wildbunch Allotment.

Not all riparian areas and spring sources are in proper functioning condition. Some riparian systems will remain at risk as a function of past management activities and/or upstream management activities. Allowing riparian areas time to recover will be affected directly by the amount and timing of livestock use and affected indirectly by hydrologic and soil function within the upland watershed area. The goal is to manage the perennial streams and riparian areas within the allotment to achieve the values commonly associated with such resources. The Apache-Sitgreaves National Forest Land Management Plan calls for a desired riparian condition of "Satisfactory," which is equal to Properly Functioning Condition, while "Unsatisfactory" is equal to Functioning At Risk, or Non-Functioning Condition.

Methodology Used for Data Collection and Analysis
The method used to assess riparian area functionality is called PFC or Proper Functioning Condition (Prichard et al, 1998). The USDA Forest Service and the USDI Bureau of Land Management throughout the west use this method as a standard protocol. The assessment requires professional judgment on 17 critical items that are rated individually, and it also requires an experienced "weighting" of factors that are out of balance to derive the summary rating. The summary rating is not a mathematical "total" but rather it allows emphasis of critically missing components, both in a positive or negative sense. A particular rating may result from various numbers of "no" responses to the 17 items rated.

Regulatory Requirements: The following section highlights major vehicles containing applicable standards, however is not intended to be an all-inclusive list.

- The **Apache-Sitgreaves National Forest Land Management Plan** (USDA Forest Service, 1987): The current Forest Plan Standard for minimally acceptable riparian condition is "Satisfactory," which equates to Proper Functioning Condition (PFC). The Forest Plan category of "Unsatisfactory" riparian condition is equivalent to Functioning At Risk (FAR), or Nonfunctioning (NF) using the standard PFC categories. Neither FAR nor NF meet minimum standards for Forest Plan Guidelines.

- The US Forest Service Directives System consists of the **Forest Service Manuals and Handbooks** (USDA Forest Service, 2000), which codify the agency's policy, practice, and procedure. The system serves as the primary basis for the internal management and control of all programs and the primary source of administrative direction to Forest Service employees.

- The **National Environmental Policy Act** (NEPA) requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions (US EPA, 2006).

- Environmental Protection Agency: **Clean Water Act** (US EPA, 2006): Arizona Dept. Environmental Quality: TMDLs (Total Maximum Daily Loads): Currently (May 2006) there are no applicable TMDL requirements in effect for the Blue River or the San Francisco Rivers (ADEQ, 2006).

- U.S. Code: Title 16, Chapter 28: **Wild and Scenic Rivers**. The Blue River is a candidate for "Wild and Scenic" classification (Cornell Law School, 2005).

- U.S. Fish and Wildlife Service: **Endangered Species Act** (USDI Fish and Wildlife Service, 2004): The Wildbunch allotment contains T&E species, some of which are dependent on habitat, especially riparian habitat within the Wildbunch Allotment. This subject is covered by the EA as well as other applicable specialist reports.

- Executive Order 11988: **Floodplain Management** (US EPA, 2006): Section 1:... to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for: (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities....

- Executive Order 11990: **Protection of Wetlands** (US EPA, 2006): ... in order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands... Section 1. (a} Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for... (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. Sec. 5. In carrying out the activities described in Section I of this Order, each agency shall consider factors relevant to a proposal's effect on the survival and quality of the wetlands. Among these factors are:... (b) maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and (c) other uses of wetlands in the public interest, including recreational, scientific, and cultural uses.

Affected Environment (Existing Conditions)

Cienega Creek PFC Assessment

Drainage: Cienega Creek, on Clifton District of the Apache-Sitgreaves National Forest.
Allotment: Wildbunch Allotment.
Priority/Rationale: High priority, mostly intermittent and ephemeral reaches, tributary to the Blue River, which is a T&E fishery. The watershed may contain wolves, peregrine falcons, spotted owls, jaguars, and Arizona hedgehog cactus. Portions of this stream have potential for good riparian systems.
Reaches included in this description: From mouth at Blue River upstream a distance of approximately 5 miles.
ID Team Observers: Carolyn Koury, Tom Subirge, and Sue Sitko (Az. G&F)
Dates Observed: 10/26/1999
PFC Rating: Extreme lowest and highest reaches in canyon were rated PFC, while in between the lower reach was ranked NF and the next higher one was FAR.

Cienega Creek

Four reaches were described for Cienega Creek, starting at the lowest PFC reach that ascends up the creek from the mouth approximately 1.5 miles. The second reach was assessed as NF and extends from mile 1.5 to mile 3.5, for a reach length of approximately 2 miles. The third reach extends from mile 3.5 up another 0.5 mile to end at mile 4.0. The fourth and last reach rated at PFC extends from mile 4.0 to mile 5.0 for approximately another mile in length. In all, 5 miles were surveyed.

Lowest canyon reach

The lowest reach of Cienega Creek extends from the mouth at the Blue River up approximately 1.5 miles. This segment was rated at PFC, and is considered at potential, being a narrow vertical walled canyon reach. The hydrological components were at potential, as most were canyon controlled. The active channel flows from wall to wall, and there is no room for floodplain development. The width of the canyon ranges from 30 to 45 feet. Sinuosity, gradient and width to depth ratio were all geologically controlled, and the riparian width is considered at potential. The upland watershed condition does not have an influence on this section, as it is mainly bare rock and not dependent on floodplain function. The are numerous waterfalls to negotiate.

The vegetative components of this section are insignificant as to riparian function, as it is geologically controlled. There are a few riparian species present growing in very protected areas, and their composition and age class distribution was considered potential. The area is not affected by ungulates, and what vegetation there is, is healthy and vigorous. This system obviously is not dependent on large woody debris. Sparse riparian vegetation consists of canyon grape, desert willow, New Mexico locust, and sand

dropseed grass. Contrasting upland vegetation consists of mesquite, Utah juniper, sideoats grama grass, and catclaw, among others.

The soils and erosion / depositional components were all stable, being bedrock controlled.

DFC: This reach is at PFC and DFC.

Second lowest canyon reach

The second reach extends from mile 1.5 to approximately mile 3.5, for a length of about 2 miles. This reach was rated as NF, as most important components were out of balance. Of the hydrological components, all were seriously impacted. Floodplains were either non-existent, or were incised and not within reach of normal flows. Channel condition was blown out by numerous high flood flows, and bedload was very coarse, consisting of cobbles. Most fines continually get carried through this system and get dumped into the Blue River. Although sinuosity and gradient are mostly canyon controlled, the width to depth ratio was far too wide, causing erosion of creek banks and floodplain terraces. Riparian zone is narrowing due to continual loss of floodplain width. Finer portions of sediment deposits are eroding out faster than they are being deposited.

The vegetative components leave something to be desired as regeneration is absent, and riparian woody species are present only as old decadent individuals. Although a diverse composition is present along the whole reach, plant vigor is generally lacking. Species present do indicate presence of riparian moisture, but they are insufficient in number to protect banks and function as a significant component in the system. This reach is not dependent on large woody debris for stability, but there was a general lack of this sized material available in the floodplain or in the channel.

The soils and erosion / depositional components are dominantly out of balance. Floodplain characteristics are either lacking not conducive to deposition due to incision, point bars are lacking, the system is incised and not vertically stable, and it appears the watershed is contributing to channel instability by supplying too much sediment and flows are peak discharges rather than lower more continuous flows.

DFC: Fine sediments need to deposit in functioning floodplains, and riparian woody species need to be able to reproduce and mature. Ungulate grazing control may help, but overall impact from excessive historic grazing practices still overshadows current management practices. Uplands have likely lost significant amounts of topsoil and related productivity, which makes proper use monitoring critical in order to leave sufficient ground cover. Watershed condition appears to drive current riparian condition of Cienega Creek.

Second highest canyon reach

This canyon reach extends approximately from mile 3.5 to mile 4.0 for another 0.5 miles. It was rated as being in FAR condition, due to several important elements that were out of balance. This could also have been ranked as NF.

The hydrologic components of this reach are not well developed to handle normal flows. Floodplains are not well developed, although they are not incised as much as downstream. There are many vertical bedrock controls that curb channel incision, however large flows cannot inundate the full width of the available floodplain. The geology of the canyon controls sinuosity and gradient, however the width to depth ratio is too wide and shallow. Over the extent of the 50 feet wide riparian width, the channel is proportionally too wide, and the vegetated riparian area on the floodplains cannot widen and pinch the channel down to a narrow configuration. The watershed appears to influence this segment of stream with high peak flows of short duration; thin soils and many areas of bedrock outcrops also produce high flows. Historic poor management practices likely have affected the watershed discharge pattern of Cienega Creek for a long time to come.

The vegetative components of this reach are better than below, but still are not adequate. The age class distribution consists mostly of old trees, while reproduction is generally missing. An extensive composition of plants indicating riparian moisture exist, however their vigor is poor. Stream banks do not have sufficient plant cover to keep soil from eroding. This system depends more on good floodplain development and live vegetation than large woody debris to maintain its structure. Although large woody debris never hurts, there is no sufficient source for this type of material.

The soils and erosion / depositional components were largely adequate. Floodplain development was overall inadequate, and the only major element that was out of balance.

DFC: Better upland watershed condition, adequate floodplain development with deposition of more fines, good density of vigorous riparian woody species holding the floodplains together. Woody riparian species should be monitored for utilization. As this riparian area appears dependent on watershed condition, it may take very long to heal.

Highest canyon reach

The highest canyon reach extends approximately from mile 4.0 to mile 5.0 for one mile of length. It was rated as being in PFC condition. The area above this reach was considered to be non-riparian. The hydrological components were generally in good shape, being largely bedrock controlled and deemed at potential. The upland watershed condition still has visible impact, but it does not seem to impact this reach as much, possibly due to a smaller watershed area. The riparian width of this reach varies from 5 to 20 feet.

The vegetative components are generally considered to be at potential, with adequate composition, age class distribution, vigor, and sufficient density present on stream banks to hold soils in place. Many areas have bedrock banks, so need no vegetation for stability.

There are some large logs lodged in the channel, though they are not needed for channel stability.

The soils and erosion / depositional components are also in stable condition, and no obvious signs of erosion are present. The channel is vertically stable, due to bedrock controls, and lateral stream movement is canyon controlled.

DFC: Generally, this reach is at DFC and PFC. Monitoring of riparian woody species herbivory would still be useful to encourage regeneration to mature

.

Mud Springs Canyon PFC Assessment

Drainage: Mud Springs Canyon, on Clifton District of the Apache-Sitgreaves National Forest.
Allotment: Wildbunch Allotment.
Priority/Rationale: Low priority, tributary to the Blue River, which is a T&E fishery. The watershed may contain wolves, peregrine falcons, spotted owls, jaguars, and Arizona hedgehog cactus. The riparian system in this drainage is in very poor shape and has limited potential to improve.
Reaches included in this description: From 475 road (Juan Miller Road), upstream approximately 2 miles (above this is non-riparian to top of watershed), and downstream about 0.5 miles (below this is non-riparian bare rock canyon). A small segment of this drainage contains riparian vegetation down near the confluence with the Blue River, however is not extensive enough to describe as a separate reach.
ID Team Observers: Carolyn Koury, Tom Subirge, and Sue Sitko (Az. G&F)
Dates Observed: 11/09/1999
PFC Rating: The entire 2.5 mile segment assessed was rated NF.

Mud Springs Canyon

Although Mud Springs Canyon was assessed in four reaches, on reviewing the site assessments it was decided to combine these into one description, as they are very similar. The following summary pertains to the entirety of Mud Springs Canyon that was assessed. All of Mud Springs Canyon was rated at NF, as the majority of components were out of balance.

Of the hydrologic components, all were considered significantly out of balance. The floodplains were in the worst shape in that most areas had such incised channels that normal flows (1-3 year frequency) could never hope to reach the floodplain and spread its flows out onto it. As a result, channels were eroding their banks, consisting of floodplain remnants. The channel was completely blown out, and bed load material consisted of coarse cobbles and boulders. All finer material including sand, silt, gravel, and cobble had largely been passed through the system to the Blue River during very high peak flows. Flow regimes that typically show high peak runoff are common in watersheds that

contain a high proportion of bedrock, shallow soils that cannot absorb much water, and soils that lack sufficient ground cover to slow surface runoff and allow time for infiltration. High runoff can also be caused by surface soils containing large amounts of clay, which is the case here. Sinuosity of the channel was largely canyon controlled, but even in wider sections there was no indication of adequate sinuosity. Bedrock outcrops geologically control the channel gradient, however the width to depth ratio was far too wide and shallow. This is an indication of unstable streams as incised channels have precluded floodplain function. The entire riparian width, which includes the channel and floodplains, varies from 50 to 150 feet, however a large proportion of this width is dedicated to active channel. The vegetated portion of the riparian width is shrinking, due to bank erosion and loss of floodplain width. This also causes loss of stream bank moisture storage, vital to plant growth, resulting in drying out the site. A few springs surface next to the channel, but these were developed by piping into livestock drinkers, and little of the original spring flow winds up flowing down the creek.

The historic management of this area, as much as a century ago, likely has had very lasting impacts to Mud Springs Canyon. Loss of topsoil from significant portions of the whole watershed creates a whole different discharge scenario, from a pattern of slow and extended runoff, to very short duration flows of high discharge. Unfortunately, this cannot be replaced, and significant change in runoff pattern likely will not happen for the next century. Significant depth of soil formation that can make a difference in runoff pattern may take time measurable in geologic scales. However, what organic groundcover is available should be maintained, and not be allowed to burn or be over utilized by large ungulates.

The vegetative components also left much to be desired. Diverse age class distribution was lacking, and mostly consisted of old and decadent individuals without any form of regeneration. The seedling and pole size class of woody species was insignificant, which is not conducive to a self-sustaining ecosystem. Although species present did indicate riparian soil moisture, there were too few left to make much difference in stream bank soil stability. Some segments bordered on non-riparian due to lack of wet indicator plants and lack of water. Plant vigor was generally poor, and browsing was commonly noted. Few smaller plants would be able to reach maturity under these conditions. Although this system does not depend on large woody debris for channel stability, there was a noted absence of such material both in the floodplain and in the channel. An adequate source for large wood regeneration was lacking. The riparian plant diversity consisted of bricklebush, velvet ash, walnut, Emory oak, little bluestem grass, sideoats grama grass, sycamore, canyon grape, skunk bush, and silk tassel. The contrasting upland vegetation typically consisted of pinyon pine, Utah juniper, gray oak, Turbinella oak, and catclaw.

The soils and erosion / deposition components were also generally unsatisfactory. Floodplain and channel characteristics were not conducive to stability, and showed signs of very high erosion rates. The channel was vertically stable in areas with bedrock control, but 4-6 feet of channel incision is a dramatic sign of instability. The stream channel was far from being in balance with the water and sediment supplied as floodplains were lacking or unavailable to normal flow events, cobbles and all smaller

particle sizes were being carried through the system, and the channel width to depth ratio was far too wide and still increasing in width.

DFC and Recommendations: Less ungulate browsing would allow more of the sparse reproduction to mature. Close monitoring of browsing is needed. This entire drainage lacks sufficient density of riparian vegetation to help bind soils and floodplains. Allow a greater portion of spring flow to discharge into the drainage in order to maintain riparian soil moisture. Uplands need to be managed for better groundcover to reduce torrential flows down the canyon.

Wild Bunch Canyon PFC Assessment

Drainage: Wild Bunch Canyon, on Clifton District of the Apache-Sitgreaves National Forest.
Allotment: Wildbunch Allotment.
Priority/Rationale: Moderate priority, tributary to the Blue River, which is a T&E fishery. The watershed may contain wolves, peregrine falcons, spotted owls, jaguars, and Arizona hedgehog cactus.
Reaches included in this description: from 475 road (Juan Miller Road) upstream approximately 2.25 miles to top of watershed, and downstream about 0.5 miles (below this is non-riparian bare rock canyon).
ID Team Observers: Carolyn Koury, Tom Subirge, and Sue Sitko (Az. G&F)
Dates Observed: 10/25/1999
PFC Rating: Mostly NF, however the upper reach was rated PFC.

Lower Reach of Wildbunch Canyon

The lower reach of Wildbunch canyon is considered riparian, and includes from about 0.25 miles downstream of the 475 road to 1 mile upstream of the road. This does not include the bare rock canyon approximately 1.5 miles upstream of the Wildbunch confluence with the Blue River. This section was considered non-riparian and does not contain much vegetation as it consists of a narrow vertical canyon, which concentrates flood flows to the point of precluding establishment of plants as they get washed out during every flow.

The lower reach of Wildbunch Canyon was rated NF due to numerous rating elements being out of balance. Of the hydrological components, the floodplain was no longer available to the channel, which had incised considerably. The channel was braided, indicating an excess of bedload, and contained mostly cobbles. All smaller particle sizes including gravel and sands get blown out of the system to the Blue River. The width to depth ratio was far too shallow and wide, though in many of the canyon confined sections the channel configuration is determined by bedrock. Signs of extremely high flows abound, indicating very high runoff from upland watershed areas. The riparian vegetation on the floodplains is not able to pinch the channel down to a more desirable narrower

width. Improvements in channel condition are a function of upland watershed condition, and may well take very long to significantly improve.

The vegetative components of this section also left much to be desired. Age class distribution of woody species was very poor to non-existent. This is an ephemeral stream reach, and much more common and vigorous riparian vegetation is expected. Plants were generally of low vigor, browsing evidence was common, and reproduction was not found. Woody debris is near non-existent on the floodplain as well as in the channel, although this system does not rely on this type of material to maintain its structure. A healthy functioning floodplain would be expected to provide stability to this system. Riparian vegetation diversity consisted of raspberry, alder, dock weed, mint, watercress, white sweet clover, cinquefoil, skunk cabbage, wooly mullein, strawberry, and red top grass. Adjacent uplands contrasted in composition to include sand dropseed grass, muhly grasses, orchard grass, Ponderosa pine, and brome grass.

Some elements of the soils and erosion / depositional components were not at potential. The floodplain and channel characteristics were not adequate to adequately dissipate flood flow energies, which results in flushing all finer particle sizes out of the system, leaving only cobbles. Removal of fines precludes being able to hold soil moisture needed to support plant growth. Many sections are now bedrock controlled due to excessive erosion, and most remaining floodplains are no longer accessible to normal flows due to incision.

DFC: This channel reach has experienced continuous upland watershed impact leading to high peak flows, and loss of floodplains due to incision. Fines need to be deposited in the channel to allow plant establishment, and floodplains need to be re-developed in order to support a good diversity and vigor of riparian woody species. Currently the total riparian width is about 75 to 100 feet wide, most of which is active channel. More of this width needs to be floodplain.

Upper Reach of Wildbunch Canyon

The upper reach of Wildbunch Canyon is about 1.25 miles long, and it was rated at PFC. It starts and is located upstream 2.25 miles above the 475 road. This is the top of the watershed.

The hydrological components were generally in satisfactory condition, however there was still evidence of extremely high flows discharging from the uplands. The riparian zone had achieved its potential extent, meaning that channel width was in balance with floodplain function. Many areas were bedrock controlled, which limited the amount of damage or alteration this area was exposed to.

The vegetative components were generally in acceptable shape, although regrowth appears limited by herbivory. Many young plants showed signs of browsing before being able to mature. In summary, although this reach was by no means lush with vegetation, it appeared to be at its potential given shallow soils and limited water availability. Riparian

vegetation diversity included alder, seep willow (Baccharis), watercress, willows, velvet ash, sumac, alligator juniper, and mutton grass. Adjacent contrasting upland vegetation included pinyon pine, gray oak, Emory oak, cholla cactus, mesquite, yucca, agave, little blue stem grass, sideoats grass, and Utah juniper. Total riparian width was only about 20 feet.

The soils and erosion / depositional characteristics appeared in balance and stable. Many sections were bedrock controlled.

DFC: Most of this area appeared to be at potential, given limited water and shallow soils. More riparian woody species recruitment would be desirable, and monitoring of browsing on riparian woody plants is needed. It may be beneficial to develop off-channel watering facilities to reduce livestock need to wander into the channel. This upper reach also contains a number of springs, which need fencing. The spring water has been piped out of the actual spring area into functional watering facilities, but impacts to the spring area should be avoided to reduce impact to the spring as well as vegetation at the spring.

Lower Blue River PFC Assessment

Drainage: Blue River, on Clifton District of the Apache-Sitgreaves National Forest.
Allotment: Pertains to all allotments in Blue River watershed.
Priority/Rationale: High priority, the Blue River is a T&E fishery, along with the lower portions of its major tributaries. The watershed may contain wolves, peregrine falcons, spotted owls, jaguars, Arizona hedgehog cactus, and spine dace. The Blue River is planned to be restored into a native fishery.
Reaches included in this description: From FR 475 (Juan Miller Road) at Stacey Crossing downstream approximately 8 miles to the confluence with the San Francisco River.
ID Team Observers: Nancy Walls, Tom Subirge, Sue Sitko (Az. G&F), Tom Palmer, Randal Chavez, Oscar Martinez, and Jim Copeland. Access was by horseback.
Dates Observed: 3/15/2000
PFC Rating: FAR averaging the whole reach. Depending on mapping scale, isolated segments may have been rated PFC or NF, but this assessment was purposely not conducted at that level of detail.

Lower Blue River

This assessment covers a large section of the lower Blue River from the Stacey Ranch Crossing of the Juan Miller Road all the way to the confluence with the San Francisco River to the south. The reach is approximately 8 miles long, and is somewhat variable in condition. As the Blue River watershed is very large, such variability is normal and expected. Large-scale assessments need to somewhat overlook relatively minor irregularities and focus on overall condition.

The hydrologic components of this section of the Blue River are somewhat stable and trying to function, though there is room for improvement. Floodplains have generally re-formed after the river as a whole had incised 5 to 8 feet below its original floodplains. In canyon-confined segments the active channel runs wall to wall, and there is no room for floodplain development. However in wider sections there are signs of fines depositing into early stages of floodplain development and these areas are also becoming vegetated with riparian species. These are good indications, but they are somewhat fragile and can easily be torn back out with higher flows. There were signs of beaver activity, but the river is too big for beaver dams to last very long. Sinuosity and gradient are generally geologically controlled by canyon-confined reaches, however the width to depth ratio of the channel was consistently too wide and shallow. This segment of the river could easily be half the existing width, and twice as deep if everything were at potential. When channels are pinched down to narrower configuration, there is more room for vegetated floodplains. Currently the riparian area does appear to be widening, but at a very slow pace. The average width of the riparian area was estimated to be about 300 feet. There are many elements of the whole Blue River watershed that are still out of balance, which transfer impacts to the riparian condition of the river. Historic management of the watershed includes timbering and road building on Alpine District, fuelwood harvesting for the ore smelters in Clifton, substantial grazing of livestock a century ago, and numerous forest fires have all impacted watershed condition and runoff regime.
The vegetative components of the lower Blue River are in fair condition, however are far from potential. Age class distribution is lacking older mature trees, being dominated by seedlings and saplings that are affected by herbivory as well as high flow events. It appears not many of the regeneration make it to maturity. There were many riparian indicator species present, and diversity of composition was impressive. Overall plant vigor appeared good. Streambanks and floodplains in the early developmental stages were not vegetated sufficiently yet, though progress was evident. The vegetal cover of streambanks and floodplains is still too frail to withstand the impacts of moderate flooding. Though this system is not dependent on large wood for structural stability, there are currently no sources for such material. Composition of riparian species included sedges, cattails, seep willow (Baccharis), rabbitbrush, Emory oak, gray oak, sycamore, alder, walnut, willows, Fremont and narrowleaf cottonwoods, desert willow, Utah and one-seed junipers, Bermuda grass, mesquite, and hackberry. Cottonwood and willow was not very common in the extreme lower reach of the Blue River, but north of the Pigeon Creek confluence they were quite common. Contrasting upland vegetation consisted of catclaw, mesquite, Utah juniper, pinyon pine, sideoats grama grass, ocotillo, gray oak, yucca, and annual brome grass, etc.

The soils and erosion / depositional components were in fair shape, but the lack of deposited fine materials was evident. This particle size still moves through the system, and there is no place for it to deposit and stay in place. The floodplain characteristics were not adequate to dissipate flood flow energies, even of lower stage floods. The system is apparently vertically stable at this point, but lateral erosion into old floodplains is still evident. The system appears not to be totally in balance with the water and sediment supplied by the watershed.

DFC: Better age class distribution of woody riparian species, more vegetal cover on floodplains, better floodplain development. Current problems are channel width is too wide, few fines (sand and silt) are depositing, and low ground cover on floodplains. With watershed impacts continuing, this system will be slow to repair itself to potential. Some tributaries show no signs of healing, which will extend the time needed for the Blue River to restore itself. Estimates range from half a century or longer.

National Riparian Service Team Assessment:
The entire length of the Blue River was assessed by the NRST in 2000 as one more or less uniform reach in FAR upward trend condition (Elmore, et al. 2000). The purpose of the trip was to provide technical assistance on riparian and fish habitat management in the Blue River and it's watershed. The team's report covers historical impacts to the Blue River system, as well as current impacts and recommendations to achieve PFC. Monitoring herbivory on woody riparian species was emphasized, however since the report was completed, most of the Blue River is or already had been excluded from grazing, except for some private lands. The entire reach that is adjacent to the Wildbunch Allotment is excluded from grazing as a non-use pasture.

Lower San Francisco River PFC Assessment

Drainage: San Francisco River, on Clifton District of the Apache-Sitgreaves National Forest.
Allotment: Pertains to all upstream watershed-impacting activities in the Blue River watershed, as well as in the San Francisco River watershed.
Priority/Rationale: Moderate to high priority, the San Francisco riparian system contains T&E habitat, along with the lower perennial portions of its major tributaries. The watershed may contain wolves, peregrine falcons, spotted owls, jaguars, Arizona hedgehog cactus, and spine dace.
Reaches included in this description: From the western most edge of the Forest boundary where the San Francisco leaves the Forest lands, upstream to the confluence with the Blue River.
ID Team Observers: Nancy Walls, Tom Subirge, Sue Sitko (Az. G&F), Robert Whitten, Tom Palmer, Randal Chavez, and Jim Copeland. Access was by horseback.
Dates Observed: 3/14/2000
PFC Rating: The 4 reaches described along this segment of river, 2 were rated FAR and 2 were rated NF. In reviewing the descriptions, all could have been classed on the low end of FAR. This assessment was purposely conducted to assess the overall condition of the river, rather than detailing small segments into different condition classes.

Lower San Francisco River

This assessment covered from the mouth of the Blue River to where the San Francisco River leaves Forest lands. Total distance approximates 12 miles. Condition of various assessed components varies, and is a function of impacts from the river. As this system is

very large, impacts can be significant in vulnerable locations. The PFC descriptions done on site were quite similar to each other. Correspondingly, they will be combined into one description as follows.

The hydrological components assessed showed signs of instability. Although floodplains were present and accessible to flood flows, it was difficult to assess whether or not enough area was available to dissipate energy of normal 1 to 3 year discharges. Total floodplain width suggested that more sinuosity may have been present at one time, however channel shifting does occur over time. Sinuosity and gradient are more a function of the canyon confinement, but the width to depth ratio was deemed too wide in most places. It could easily be pinched down to ¾ of its present width. Beaver signs were present, but the river is far too large for beaver dams to persist. The riparian zone does appear to be widening, trying to pinch the channel down to a narrower configuration, but the signs are subtle and the trend is slow at best. The upland watershed condition was deemed to highly influence this portion of the San Francisco River. There was evidence of historic agriculture on adjacent floodplains. At one time these were plowed fields from which all woody riparian vegetation had been removed. Floodplains in this condition have less impact on sediment filtration, aside from lacking habitat values. The upstream area around Glenwood, NM is heavily impacted by agricultural practices including field clearing of riparian vegetation, irrigation diversions, diking and channelizing the river, and grazing along the river corridor. All of these practices impact the river directly, including lower water quality, higher sediment transport, and lower flood attenuation. The immediate surrounding canyon lands appear stable.

The vegetative components appear fairly good along this portion of the river. Floodplains are vegetated, but streambanks could use more cover to resist erosive forces of flood flows. Age class distribution varied somewhat, and mature woody species occurred in scattered pockets being remnants of past flood flows. Some areas had no regeneration of more palatable riparian woody species. Seedlings and saplings were more common than mature trees, and they tended to occur in narrow strips that easily get torn out in high flow events. Terrace and floodplain vegetation was generally small in size, which needs to grow to a larger size to better resist flooding. Generally the vegetation exhibited high vigor, but most areas did not have enough density of plants to resist flood flows and hold soil in place. Although this river does not depend on large woody debris for structural stability, there was no adequate source for this size of material. Currently, narrowleaf cottonwood and mesquite are supplying some large wood.

Riparian area vegetation was highly diverse and included narrowleaf cottonwood, alder, Fremont cottonwood, seep willow (Baccharis), Bermuda grass, desert willow, three-awn grasses, sycamore, grama grasses, jojoba, hackberry, tree tobacco, algae, monkey flower, willows, annual love grasses, white sweet clover, horsetail, cattails, walnut, bird-of-paradise, salt cedar, elderberry, cockle burr, rumex, wooly mullein, water mill-foil, sedges, night shade, wolfberry, and sprangletop grass to name the most common. The contrasting upland vegetation commonly consisted of mesquite, gray oak, catclaw, snakeweed, fluff grass, little blue stem grass, three-awn grass, cholla cactus, prickly pear cactus, junipers, white thorn, ocotillo, pinyon pines, jojoba, and sideoats grama grass.

The soils and erosion / depositional components showed some instability. Floodplain and channel characteristics were inadequate to dissipate energy of high flows. Much of the regeneration is too young to stay erect in flood events, and it will simply lay over and flatten out. Although this may serve to anchor soils, it does not help catch and hold larger debris transported during flooding. Some point bars are forming, and are vegetated with cottonwood seedlings. The system appears vertically stable during normal flows and lateral movement is limited to the width of the canyon bottom. However during 1993, the Lopez well area blew out during a flood flow, and the 2 foot casing is now 16 to 20 feet in the air. Total riparian width, including the channel is about 200 to 250 yards. It appears the river is not in balance with the water and sediment supplied by the watershed. Flows are likely more peaked than they used to be, and there appears to be more erosion than deposition of fines.

DFC: Increased sinuosity, equal age class distribution of riparian woody species, a narrower and deeper river channel, more deposition of fines on point bars and floodplains, wider riparian zone, more large wood incorporated in floodplains and channel, more sedge cover in places. It is recommended to close the road that follows the San Francisco river bottom, NRCS can help manage and reduce impacts of the Glenwood area, and general watershed improvements that help reduce flash flooding.

Desired Conditions

Desired Future Conditions – Drainages

Four types of drainage segments or reaches were determined by the IDT for analysis on 1/28/06. Reaches are determined based on geologic/physical features, specifically, sinuosity, gradient, valley width and flow. First of the four (ephemeral) is not considered a riparian type, while the remaining three are considered riparian types for the reasons and definitions as follow. Examples of the various drainage types are given, but are not all an all-inclusive list.

1. ***Ephemeral Drainages***: typically found in the steeper, headwater reaches of drainages. These function solely to collect and transmit water off the uplands, hence, they contain vegetation of the same species and stature as the upland vegetation. As moisture runs off before any significant amount can be stored, there is no immediate beneficial effect to vegetation. Channel morphology (drainage configuration) is too variable in ephemeral reaches to allow applying any sort of standard or expectation. Ephemeral reaches also are not connected to shallow water tables.

   Dry Prong Canyon

   Upper Hog Canyon

2. ***Xeroriparian Drainages***: typically found in reaches with lower gradients and wider valley widths, where water slows and moisture is stored in deeper alluvial

soils. Upland vegetation takes advantage of the greater residence time of water to grow larger and denser than what grows in the uplands or in ephemeral reaches. Tree species such as oaks grow to large trunk diameters with impressive spreading crowns while shrubby species easily attain twice the height found on adjacent uplands. The positive effect on vegetation is strictly from storage of run-on moisture, and there is no shallow ground water table that roots can tap into, as one would expect in intermittent and perennial reaches. This type of habitat is excellent wildlife and bird nesting habitat, usually being connected to wetter riparian habitat downstream. Although vegetation is typically not obligate riparian in these reaches, the hydrologic characteristics of channel and floodplain configuration should parallel signs of stability found in wetter reaches.

Cienega Creek where adjacent to Forest Road (FR) 475

Wildbunch Creek the approx. first mile upstream from FR 475

3. ***Riparian-Intermittent Drainages***: found where obligate riparian species occur intermittently along the reach due to sporadic presence of water from spring sources or from subsurface flows; also includes areas such as isolated springs. Presence of surface water is dependent upon subterranean bedrock configuration that allows water retention at relatively shallow depths or actual surfacing of low flows along intermittent sections of the stream course. The presence of a shallow water table allows obligate riparian species to sustain themselves during dry periods, which also sustains a myriad of wildlife species. Channel and floodplain characteristics are expected to display typical signs of stability to be considered in proper functioning condition.

   Mud Springs Canyon between Upper and (lower) Mud Springs

   Cienega Creek between Cienega cabin and Upper Cienega Springs

   Seep Spring

4. ***Riparian-Perennial Drainages***: found where there is perennial surface and ground water and riparian-obligate vegetation is fairly continual along the reach. Generally, perennial reaches are located at the mouths of fairly sizable watersheds, which are required to supply sufficient and continual discharge to sustain surface flows throughout the year. Proper functioning condition of perennial streams includes all 17 critical elements found in standard lotic PFC assessments, which encompasses hydrology, vegetation, and soils. Reaches meeting PFC criteria are also in satisfactory riparian condition in terms of Forest Plan standards. Channel, floodplain and vegetation characteristics are expected to display typical signs of stability. Properly functioning perennial streams provide the greatest diversity of essential wildlife and fish habitat, migratory bird habitat, as well as providing groundwater recharge and surface water for a multitude of uses.

Blue River

San Francisco River

The riparian reaches (2-4 as defined above) are shown on a map in fisheries specialist report (Bill Wall). They have water and a greater diversity, quantity, and quality of plants that provide for wild and domestic animal needs. Their importance therefore far exceeds the proportion of allotment acres they represent. The environmental analysis for the Wildbunch AMP contains Desired Future Conditions (DFCs) for uplands, which also apply to ephemeral drainage reaches. However, the IDT determined that DFCs were needed for the three riparian reaches due to their uniqueness and susceptibility to livestock impacts.

DFCs are goals set to reflect necessary ecosystem structure and function. DFC goals are long term because recovery and changes in ecosystems takes time, however, because systems can easily unravel if progress toward necessary conditions is not adequate, timeframes are given. The DFCs, as described, are attainable, measurable, on-the-ground conditions. It is recognized, however, that unforeseeable events such as wildfire, drought or flooding, where extended or extreme, may require reassessment of the DFCs.

DFCs and Timeframes with Rationale

NOTE: Accomplishment of the riparian DFCs is *greatly dependent* on steady progression toward the upland DFC for tolerance ground cover.

The descriptions of DFCs that follow are organized into three major sections that parallel assessment of riparian areas by the PFC (Proper Functioning Condition) methodology (Prichard et al, 1998), followed by timeframe expectations. PFC has been used by many Federal land management agencies (USDI BLM, USDA Forest Service, various state agencies, etc.) throughout the western United States. Interestingly, its development initially occurred in Arizona.

Ephemeral Drainages

Hydrology: Ephemeral drainages are highly variable in configuration (channel gradient, widths, bedload size fractions, etc.) and therefore more uniform standards or expectations of conditions found in wetter reaches cannot be applied. Of course, obvious signs of drainage network instabilities, such as headcuts, should *not* be present. These drainages are active only for very short durations and serve to convey surface runoff from the watershed. As the residence time of water within these drainages is very short, there is no significant storage of moisture that vegetation can take advantage of beyond adjacent upland conditions. DFC of ephemeral drainages would parallel acceptable watershed condition and soil condition.

Vegetation: See upland DFCs covering similarity of vegetation composition and tolerance ground cover.

Erosion/Deposition: Ephemeral drainages are the ultimate source of the vast majority of sediment that is conveyed by large streams and rivers. Once sediment

arrives in an ephemeral drainage, it is only a matter of time for it to be conveyed through the network of drainages all the way to the ocean. The residence time of sediment within ephemeral drainages is dependent on the frequency and magnitude of runoff events, which are the transport mechanism. As a watershed's runoff is a function of soil surface conditions (slope, infiltration rate, compaction, ground cover, etc), maintenance of optimum surface conditions over the entire watershed is imperative to acceptable watershed function. Any activity, which accelerates surface runoff, also proportionally increases sediment transport through the system. Of course, soil erosion is natural and cannot be stopped; however, *accelerated* soil erosion (above tolerance rates) is detrimental to site productivity, soil fertility, etc. and can impact downstream resources such as water quality, turbidity, habitat quality, etc. Although small ephemeral drainages may seem insignificant, they represent the vast majority of drainage length in a watershed, and their impact on the larger drainages cannot be underestimated. DFC of ephemeral drainages parallels acceptable watershed condition and soil condition.

Timeframes: There are no timeframes specifically associated with ephemeral drainages, although a time-related goal may apply to reaching satisfactory upland watershed conditions.

Xeroriparian Drainages:

Hydrology: The hydrology of xeroriparian reaches is dependent upon runoff from the watershed's ephemeral reaches. Although surface flows in xeroriparian reaches are also ephemeral, there are beneficial effects to vegetation in that some additional moisture is stored in the deeper alluvial soils associated with wider valley widths and lower gradients. Moisture is only stored as a function of soil moisture holding capacity, and there is no shallow water table beneath these areas, such as one would expect in intermittent and perennial reaches.

At PFC, the hydrologic characteristics of channel and floodplain configuration should parallel signs of stability found in wetter reaches. Channel capacity should be in balance with normal runoff, and evidence of floodplain inundation should be present (organic debris stacking, or bent down vegetation). Floodplains, no matter how small, might be inundated every few years given normal precipitation events. There should be a balance between channel with and floodplain width, normally this ratio is at least 2:1 (floodplain width to channel width or greater, meaning the floodplain should be far wider than the channel.

Examples of what *not* to expect (FAR or NF) are incised channels (gullies) in which normal runoff events cannot reach floodplains, and therefore cannot spread out over the floodplain to dissipate energy. Incised channels rapidly convey runoff through the area without sufficient residence time to infiltrate into soils and recharge soil moisture storage across the floodplain. This reduces plant available moisture and dries the area out reducing its vegetative production potential. Floodplains function to effectively reduce energy (velocity) of flows, which allows sediment to drop out rather than be transported. Contrarily, gullies

maintain or increase flow velocity, which also results in far greater than normal sediment transport.

Vegetation: The vegetation composition found in xeroriparian areas contains the same species that are found in uplands. Although none are considered riparian obligates, at times species are present that are normally found in higher precipitation zones, such as finding Ponderosa pine in drainages running through pinyon and juniper woodlands, or stringers of various oaks in drainages running through desert grasslands. Another important indicator of xeroriparian systems is the growth form or stature that the various vegetation species are able to attain. Oaks often attain impressive trunk diameters with huge spreading canopies, while the same species are much smaller on adjacent uplands. Shrubs easily attain double their height compared to uplands, and even grasses appear much healthier and taller, and commonly produce larger seed heads. All of these symptoms are the result of soil moisture storage in excess of that found in uplands.

Xeroriparian reaches would display vegetation characteristics similar to wetter intermittent or perennial reaches that are at PFC. Age class distribution within these reaches should show evidence of reproduction, as well as attaining full maturity. Coarse woody debris in the form of dead mature trees should be present. In the arid southwest, peak flows are a common function of our localized precipitation patterns, and coarse woody debris scattered across floodplains plays a significant ecological role. It affects sediment retention, nutrient cycling, absorption of flood flow energies, as well as providing various habitat.

Examples of what *not* to expect (FAR or NF) would include a noticeable lack of reproduction with resulting lack of age class distribution, lack of ground cover resulting from over utilized understory species, bare ground in shaded areas used for lounging or regular bedding, over representation of increaser species and weeds which cannot effectively function to hold floodplain soils during normal flood events.

Erosion/Deposition: With respect to xeroriparian drainage reaches, the above section re: hydrology summarizes this section's needs as well: channel capacity should be in balance with normal runoff, and evidence of floodplain inundation should be present. This implies that no excessive erosion is evident in form of incised channels, headcuts, etc., and that excessive deposition is not present either. Excessive deposition may be result of large-scale watershed instabilities such as runoff from large fires, slumps or slides that result in massive deposition, etc.

Timeframes: Most timeframe issues are related to recovery of vegetation. If the xeroriparian area is in less than desirable vegetal condition, timeframes may reasonably expect vegetal recovery within the 10-year planning period of the allotment plan, and signs thereof should become noticeable some time during mid-cycle (seedlings). Depending on the severity of hydrological or

erosion/deposition related imbalances; a decade may or may not be sufficient time to heal these items. However, a healthy upward trend might be expected to at least see progress towards these goals. Due to the infrequency of live flows through xeroriparian areas, which are also needed to do the physical work of recovery, healing of these systems is slow. Minor imbalances can either come close to recovery or actually recover outright, however larger imbalances will likely take more than a decade to heal. Significant progress might entail visible building of floodplains outside the channel, channel width shrinking yielding area to floodplain establishment, formation of point bars, no signs of excessive erosion (head cutting) of deposition (such as massive deposition around normal base swell of a tree trunk).

The following DFCs for intermittent and perennial drainages are related to the 17 proper functioning condition checklist items. Expectations for PFC / satisfactory riparian condition are bulleted accordingly and apply to both intermittent and perennial systems. These key items were selected because this is the standard methodology to assess lotic riparian conditions and because existing PFC assessments and condition information is available on many drainage reaches on the Wildbunch Allotment.

Riparian-Intermittent and Perennial Drainages:

Hydrology:

- Floodplains immediately adjacent to the stream should become inundated in relatively frequent events (every 1-3 years). At PFC, perennial systems will inundate floodplains nearly every year, while intermittent systems may only do this every three years or so. However, unless in a canyon confined system, adequate floodplains should be available. Examples of what not to expect (FAR or NF) are incised floodplains that cannot be reached by 1-3 year events, lack of a floodplain with extremely wide and shallow channels, or an inadequate floodplain width in systems that are trying to recover. Where floodplains are lacking or inadequate, "significant recovery" trends should include signs of depositing fines along channel sides, which might turn into a floodplain given more time.
- Sinuosity, width/depth ratio, and gradient should be in balance with the landscape setting. At PFC, this implies the width/depth ratio of the channel be in balance with an adequate and available floodplain. Most steeper gradient channels on the allotment are located in canyons, which implies low sinuosity and a gradient fixed by the canyon bottom. However, sufficient channel width/depth ratios and adequate floodplain widths are often lacking. Signs of significant improvement might include deposition of fines along channel sides, indicating widening of floodplain width. Regarding sinuosity, signs of establishing point bars (deposition of gravel and fines) can be expected within the 10-year timeframe.
- Riparian wetland area is widening or has achieved potential extent. This implies optimal floodplain development, which is also in balance with the channel configuration. Channels that are not at PFC will appear wide and shallow with little floodplain, rather than narrow and deep with significant floodplain width. Significant improvement would consist of signs of establishing flood plains

through the deposition of fines along channel edges, or channel width shrinking by vegetated floodplains crowding the channel from both sides.

- Upland watershed condition should not be contributing to riparian degradation. Historic landscape-scale livestock use has significantly impacted most watersheds on Clifton District during the turn of the century (late 1800's). Since then, most of these watersheds have been in the healing process, however some are still below acceptable thresholds in terms of groundcover, etc. As one would expect, these watersheds display signs of instability in their drainage network, such as inadequate floodplains with very little storage of fine sediments, wide and shallow channels, large bedload size fractions, etc. Signs of significant improvement would center around re-establishment or widening of floodplains. In case of stable watershed/drainage relations, floodplains should not display raw eroding banks.

Vegetation:

- At DFC, all 3 age-classes of native, riparian-obligate woody species are desired to be present and vigorous. These classes are: seedling/sprout, young/sapling, and mature/decadent (Winward 2000). However, most riparian areas will recover themselves with two age classes as long as one age class is young to allow recruitment (PFC). Older age classes can persist, even with degraded conditions. Having all age classes represented demonstrates successful reproduction and maintenance. Signs of significant improvement would focus on adequate presence and health of woody riparian vegetation. Terminal buds should not be grazed in order to allow plants to attain height and maturity.
- Diversity of composition: 2 or more native, riparian-obligate woody species *and* 2 or more riparian-obligate herbaceous species must be present and vigorous for PFC. In most riparian areas on Clifton District, diversity is present, and is not the limiting factor.
- Sufficiently vegetated stream banks. Native, riparian-obligate species have root systems able to withstand high flows defined approximately as 10-year events. Presence of both woody and herbaceous species assures both large extensive roots and fine fibrous roots are present to increase sediment retention within the drainage that help protect banks and areas of aggradation, while dissipating flow energy throughout the drainage.

- The following native, riparian-obligate species currently occur on the allotment, but not all age classes are present in desired amounts, and not all are vigorous; their presence supports the potential for DFC: Fremont cottonwood (*Populus fremontii*), narrowleaf cottonwood (*P. angustifolia*), Arizona alder (*Alnus oblongifolia*), sycamore (*Plantanus wrightii*), seep willow (*Baccharis glutinosa*), velvet ash (*Fraxinus velutinus*), sedge (*Carex* spp.), redtop (*Agrostis stolonifera*), deer grass (*Muhlenbergia rigens*), bluegrass (*Poa* spp.). Significant improvement would entail seeing sufficient seedlings of woody riparian species, and in good health, in order to achieve maturity.
- Plant vigor is an expression of the ability of riparian-wetland species to hold an area together. Weak plants indicate the area is subject to degradation. Among woody species, weakness is recognized in severe hedging, lack of height growth

or attainment, lack of terminal buds, numerous dead branches, and exposed roots, among other symptoms. Herbaceous plants are expected to provide dense effective ground cover, and in recovering systems should be noted to be invading barren areas with newly establishing plants. Significant improvement in plant vigor should be expressed in density regarding herbaceous species, and in common occurrence of healthy seedlings among riparian woody species.

- At PFC, riparian-wetland vegetation cover is adequate to protect banks from erosion. Depending on stream type, this is considered to include about 75% of the stream banks.
- If needed, riparian areas should have an adequate source for large woody debris. Not all systems need woody debris, such as canyon-confined areas, or steep gradient reaches. Most sand/gravel reaches have a need for coarse wood, which provides habitat and food for aquatic environments, as well as functioning in hydraulic energy dissipation. Significant improvement might entail commonly seeing woody debris embedded in riparian area, give a source is available.

Erosion/Deposition:

- Floodplain and channel characteristics should be adequate to dissipate energy. The idea behind this is that stream energy needs to be adequately dissipated or erosive forces gain momentum and the system unravels. Signs of inadequate energy dissipation might include lack of deposition of fines, wide shallow channels, large sized bedload, inadequate floodplain widths, or lack of vegetation that is regularly scoured out. Normal energy dissipation is expressed in deposition of fines, and formation of floodplains.
- Point bars should become colonized with riparian-wetland vegetation. This opportunity is only found in wide floodplains offering sufficient room for channel meandering. Steeper gradient systems or canyon-confined systems do not often have significant point bars.
- Lateral stream shifting should be associated with natural sinuosity. Continual re-location of channels following every high stream flow event is not desired and considered a sign of imbalance.
- Stream channels need to be vertically stable. Typical signs of vertical instability include head cutting. Head cuts are easily seen in cohesive fine-grained materials such as found in meadows, however due to a low angle of repose, coarser materials often disguise channel lowering. Clues of instability might include vertical stream banks, lack of floodplain in incised systems, etc. Signs of improvement would include deposition of fines which leads to floodplain building.
- Streams at PFC are in balance with water and sediment supplied, both of which are somewhat constant in healthy systems. Clues of imbalance might include mid-channel sediment bars, braided channels, or unstable stream banks.

Timeframes:

- The **expected timeframe** for accomplishment of the above riparian-intermittent and perennial DFCs is 10 years. Perennial systems include Blue River and San Francisco River only. Seedling/sapling age class of native, riparian-obligate

woody species regeneration would be present, vigorous, and well represented at year 5. As many of the above desired conditions are a function of normal stream flow, exceptionally dry years need to be taken into account regarding progress potential.

Mitigation Measures

Mitigation measures designed to reduce impacts to riparian areas are various, depending on alternative. Season of use can be used as a mitigation measure, as cool season or winter access of riparian drainages results in minimal impact as livestock spend minimal time there. Cattle tend to linger in these areas only long enough to water, but prefer to spend their time grazing warmer slopes, rather than loafing in canyons and drainages that act as cold air drainages. During cold seasons, livestock tend to utilize riparian vegetation minimally. Duration of use can be used to limit riparian area exposure to livestock impacts. Rest rotation is a tool used to change riparian area impacts to different seasons. One given year might use an area during summer, while in the next year the same area gets used during a different time of year, or not at all. Total exclusion of livestock, such as the "no action" alternative proposes, is effective in riparian recovery. Numbers of livestock allowed or targeting a set amount of forage (AUMs) available for use can also change impacts to riparian areas. Fencing is used to keep livestock from entering riparian areas. Fencing can be either in form of disconnected drift fences that address particular problem areas, continuous exclosure fences that isolate a given area, or pasture fences that can also be situated to limit riparian access. Water gaps are another example of fencing that aims to minimize riparian impacts to small areas, allowing livestock to access water, but disallowing access to riparian area grazing. Electric fencing can also be used, however this tends to require more maintenance. Herding can be used to push livestock out of sensitive areas, however this is a continual job as livestock have such high preference for riparian areas, especially during hot summers. Herding is not viewed to be a very effective method of mitigating impacts to riparian areas. Monitoring utilization levels is critical when used to limit riparian use levels by triggering movement to the next pasture, before excessive use becomes a problem.

Environmental Consequences

The inclusion of livestock grazing in a formula designed to meet minimum riparian condition standards, or at least encouraging a strong improving trend towards this goal to develop inside of a 10-year allotment management plan, is extremely difficult, if not impossible in arid climates. It should be noted that an "improving trend" is not defined as an expectation to reach PFC within 10 years, however the trend should be significant, obvious, and measurable, rather than insignificant. Forest Plan standards cannot be achieved unless improvement trends are significant.

Various alternatives (1) suggest allowing 35% use in riparian areas, regardless of present condition. This amount of use may be reasonable once riparian areas reach PFC/DFC, however allowing this level of use in degraded areas AND expecting them to notably improve towards fully functioning condition in 10 years may not be realistic. Many of

the unsatisfactory reaches are simply too far from PFC to sustain 35% use and be expected to improve. The 35% use is "averaged" across herbaceous and woody riparian species, however, when very little vegetation is present, such as in unsatisfactory conditions (FAR and NF), then even this amount of herbivory cannot easily be afforded and will occur at the expense of riparian condition improvement. It is difficult to estimate total impacts of 35% use levels within narrow riparian areas as numerous negative effects are implied and additive: trampling, bedding, loss of seed sources and plant establishment, impacts to channel bank morphology and floodplain building processes, etc. Another significant variable is when utilization is measured, and where. If utilization is measured during use and rotations are based on riparian utilization, then plant recovery can most likely occur, given "average" climatic inputs. However if utilization is based on upland use, then riparian utilization will likely exceed target levels, and improvement of riparian resources will be difficult. Also, if utilization is not measured until after the end of the growing season, exceedances cannot be corrected mid-season, and riparian improvement will also be impaired.

An additional risk of incorporating grazing into a relatively short riparian improvement schedule is the fact that improvement primarily depends on rainfall and normal runoff events. While the effects of various rotational grazing schedules no doubt can have different impacts, these impacts are secondary, and additive to less than favorable climatic conditions, such as we are currently experiencing. During drought, far less vegetative growth occurs, even throughout riparian areas. Removing 35% of little growth to begin with can quickly eliminate marginal progress made, not to mention greater tendency for riparian usage during hot dry weather.

A significant number of the riparian areas surveyed were not in acceptable condition, being in a condition somewhat less than PFC (Proper Functioning Condition). Forest standards require PFC to be the minimum acceptable condition of riparian areas. Those reaches rated at FAR (Functioning At Risk) might have a chance for significant improvement if browsing is monitored on riparian woody species, and these are allowed to mature and reproduce. However, there are a number of reaches that are rated NF (Non Functioning) and that are in such poor shape that it is estimated it might take extremely long recovery times to restore them to an acceptable condition. Some of these appear to reflect poor watershed condition and extremely high runoff events that blow out the channel on every runoff event. Until watershed condition changes drastically, no changes are deemed possible within the riparian system. Some of these impacts are likely the result of historic livestock management practices, while the impacts of current practices may well be overshadowed by past impacts.

It appears that few of the riparian areas of concern are separately fenced off from the rest of the pasture. Given the fact that most of the alternatives allow grazing on a rotational pattern throughout the year, the bottomlands will rarely get complete rest from livestock use. Areas rated FAR or NC may not be able to take any use to allow recovery to take place. Monitoring for browsing on riparian woody species will be critical to any of the alternatives that allow access to riparian areas. While this may result in early rotation of the pastures, it also will not allow proper use of the uplands. Fencing the critical reaches

of riparian areas out from livestock use may be the only way to achieve better distribution of use in the uplands. Stock water also needs to be supplied away and out of the riparian areas, so that stock does not linger there.

Obviously, the no-grazing alternative would benefit riparian areas the most, however this is not the only way of limiting use of riparian areas. Dormant grazing may have some merit, as during winter, use in cold canyon bottoms is limited. It is highly recommended to monitor riparian species use closely, no matter what grazing alternative is implemented. Use exceeding 20% of terminal buds may be excessive, especially when existing plants are highly stressed and hedged to begin with. Fencing of critical riparian reaches may offer greater flexibility in utilizing the uplands without needing to rotate out of a given pasture before reaching upland utilization goals.

Impacts under Alternative 1

Of all action alternatives, Alternative 1 (Proposed Action) stands the greatest overall chance to partially recover riparian areas towards the Forest Plan goal of satisfactory riparian condition (PFC). It is not expected that riparian recovery will be complete or significant in all riparian areas, however the grazing rotation plan does allow for rest between grazing periods. The stocking rate is planned to start with 156 head, and the maximum numbers could increase to 229 head (plus 8 horses) once all improvements are in place. The actual improvement that occurs in riparian areas during or at the end of this 10-year plan will depend on several assumptions:

1) Climatic input: "Normal" precipitation patterns (average) are assumed to produce sufficient moisture for forage production in the watershed, as well as produce flows to sustain and improve riparian conditions. Setbacks are common in riparian recovery and can be caused by unusually high precipitation events with ensuing flood damage, or more commonly, unusually low precipitation, causing droughts that limit growth potential. In both cases riparian recovery is significantly affected and may produce results lower than potential under ideal conditions.

2) Grazing monitoring: Riparian recovery depends on vegetative recovery as well as maintenance of hydrological features such as stream banks and floodplains. Although this allotment management plan primarily targets vegetative utilization, restoration of natural hydrological features cannot be ignored. Use of riparian vegetation is not to exceed 35%, however, depending on season of use, if the majority of this use occurs on riparian woody species, then riparian recovery may be limited. Likewise if establishing floodplain vegetation is excessively impacted in local spots, this also affects riparian recovery. Similarly, even if no vegetation is consumed, and newly establishing stream banks continually get knocked down, riparian recovery is also affected. Close monitoring of livestock effects along with timely preventive action will be key to showing success in riparian recovery. In order to limit riparian use and achieve upland utilization goals, it may be necessary to continually herd livestock as often as necessary or erect temporary fences.

Impacts under Alternative 2
The no livestock-grazing alternative (Alt. 2) would allow fastest possible recovery of riparian areas. As livestock would not be present at all, key areas such as the riparian corridors would not be impacted by herbivory or hoof-related impacts. Herbaceous riparian species would be allowed to establish on banks and redeveloping floodplains, and woody species would be allowed to mature and reach full height without loss of terminal buds and branches. This allows fastest vegetative recovery, as well as eliminating impacts to bank and floodplain building processes. Alternative 2 stands the greatest chance of attaining Forest Plan standards regarding riparian condition or at minimum showing a healthy and measurable trend towards this goal. However, it is not realistic to expect riparian stream reaches currently in FAR or NF condition to fully recover to PFC. In most cases, 10 years is simply not time enough for this to happen, and especially not when considering the less than optimal precipitation we have currently been experiencing. Riparian area recovery is dependent on normal precipitation and runoff events. A significant improvement trend is expected and some FAR reaches could potentially come close to PFC.

Impacts under Alternative 3
This alternative stands little chance to markedly improve riparian conditions over a 10-year time span. Year long grazing systems do not allow for sufficient rest between grazing cycles to result in improved range and riparian conditions. Those riparian areas that happen to get used during winter might stand a chance to improve as livestock spend little time in cold drainage bottoms. However, all pastures used during mild or warm seasons will likely result in allowing riparian utilization targets to be met far before upland targets are met, triggering early pasture moves or running out of pastures before year end. Without continual close monitoring of livestock impacts to riparian areas, and timely preventive action, targeted use levels of 35% or 45% of upland forage will simultaneously result in significantly exceeding riparian utilization thresholds.
Use of identical pastures during same time of year, year after year, has a low probability of allowing riparian areas to recover, not speaking of allowing riparian woody species to mature or reproduce. Annual use will keep plants hedged and leader growth stunted. Seedlings have a high chance of getting grazed off before reaching pole stage, while excessive lounging in drainage bottoms allows trampling of hydrologic features trying to re-establish, such as floodplains and stream banks.

Without range improvements that help re-distribute livestock out of the bottoms, this alternative stands a low probability for riparian recovery to take place within the 10-year planning period. Stocking rates are 212 head year round with 8 horses (36% higher than Alternative 1 initial stocking and about equal in final potential with all improvements in place), which adds significant grazing impact to riparian areas. Alternative 3 would not likely produce an annual net gain of riparian vegetation, and it would allow significant physical impacts to occur to recovering hydrological features on an annual basis.

Impacts under Alternative 4
Although range improvements will help re-distribute livestock and reduce impacts to riparian areas, they first need to be funded and then built. This will take an amount of time during which management impacts will resume. It is doubtful that the long list of improvements can be implemented in time to allow riparian recovery to reach a significant upward trend, or restore a reach in FAR condition to PFC within the 10-year time span of the Allotment Management Plan.

This alternative rotates all pastures through inside of two years, and every pasture gets used every year, although at different times of year. Stocking rates are similar to Alternative 3 and are initially set at 212 head with 8 horses (36% higher than Alternative 1 initial), rising to 316 head (38% higher than Alternative 1 potential of 229) after all improvements are in place. Higher stocking rates are expected to increase grazing impacts to riparian areas, and will not allow for significant recovery or improvement. Dormant season utilization targets are 45% in up-lands, however, unless continuous monitoring occurs in riparian areas, this may result in insignificant riparian improvement or actual further negative impacts, which does not meet the riparian improvement goal during the planning period. The three main pastures are used during the same time every year, which allows little rest for net progress in riparian areas, at least until fencing improvements are installed. After fencing is installed, close monitoring and quick management action will be needed to avert further negative impacts to riparian areas if the improvements fail to perform as expected.

As this Alternative depends on the installation of many improvements; it is doubtful this alternative will be able to alter livestock management in time to allow for significant riparian improvement. Goals of meeting Forest Plan standards for riparian condition or at minimum showing a healthy and measurable trend towards this goal are unlikely to be met inside the planning period with Alternative 4.

Impacts under Alternative 5
Alternative 5 stands a low chance to meet riparian goals within the 10-year planning period. Although improvements are planned similar to Alternative 1, these must first be funded and then installed in order to accomplish their intended purpose. Before completion of all these improvements, progress in riparian condition will rely upon continual monitoring and prompt management action in order to avoid excessive use in riparian areas. As the planned grazing schedule is relatively short and intense using a high number of livestock, it will be even more difficult to keep from over-utilizing and impacting critical riparian resources. This alternative provides for 7 months of grazing for 437 head, with a potential of supporting 598 head (cow with calf) after installation of all improvements, which amounts to 161% or almost triple the stocking rate of Alternative 1. Even with dormant season use, this number of head will be difficult to control and keep out of riparian areas until drift fences can be installed, which will trigger faster pasture rotation than planned, and lower upland utilization than planned. Until all improvements are installed, this alternative stands a good chance to negatively impact

riparian areas to the point where the time left after installation of improvements will not be sufficient to produce a net progress over the planning period.

Although this alternative provides for long non-use periods, it is doubtful this will make up for intense use during the dormant season. Once all improvements are in place, this alternative might allow riparian improvement in those areas that will be protected with drift fences. All other pastures not scheduled for riparian drift fencing will likely result in a net loss to riparian condition. Nearly all pastures contain a segment of riparian area needing to show improvement. Overall, Alternative 5 stands a very low chance to meet Forest Plan riparian condition goals within the allotment planning period.

Cumulative Effects

This cumulative effects discussion pertains to all alternatives, as the size of the Wild Bunch Allotment does not change proportionally to the entire Blue River watershed. The potential impacts to the watershed as a whole are very small as to become insignificant due not only to the allotments small relative size, but also due to its location near the mouth of the watershed. The cumulative effect of this allotment in conjunction with all other projects in the watershed is also discussed.

Impacts of the allotment to the whole watershed:

Generally speaking, grazing allotments only have impacts to three types of watershed outputs: water quantity (runoff or discharge off the watershed), water quality, and sediment yield, all of which can potentially affect riparian resources. Depending on the scale of analysis, the Wildbunch Allotment may have only insignificant impacts to the Blue River and San Francisco Rivers, at a 4^{th} or 5^{th} code (HUC) scale.

Runoff: In terms of runoff attributable to the management activity, this would not be measurable as the size of Wildbunch Allotment contributes only 8% of the lower Blue River 5^{th} code watershed and only 3% of the San Francisco River 5^{th} code watershed. If comparing to the whole Blue River watershed (two 5^{th} code watersheds), then the allotment would only be less than 4% of the watershed, and even far less at a 4^{th} code scale. The amount of discharge attributable specifically to Wildbunch allotment management would disappear in the normal range of variability of discharge that is encountered across nearly 400,000 acres of the Blue River watershed ranging in elevation from over 9000 feet down to 3600 feet. This is not to say livestock cannot impact whole watersheds, which happened in the Blue River watershed during the turn of the century. However, during that time, the whole watershed was impacted to extreme levels, which does not happen today in the same order of magnitude. The expected effect this allotment potentially has on runoff is negligible regarding impacts to riparian resources.

Water quality: In terms of water quality, livestock can affect water chemistry on a small scale by raising salinity and by contributing to bacterial counts, both from body waste. However, in terms of impacting water quality on a 5^{th} code watershed scale, it is highly unlikely that this can be tracked and attributed with any certainty. Water solutes (i.e. salts, carbonates, nitrates, etc.) are often a function of discharge. During peak flows, solute content of runoff water is normally very dilute, but during normal low flow events,

solute concentrations increase. This is a normal pattern found in water quality analyses, and attributing an insignificant portion of this to allotment management practices is next to impossible. The normal range of variability is far larger than what small amount might be attributable to the allotment. The expected effect this allotment potentially has on water quality is negligible regarding impacts to riparian resources.

Sediment Yield: In terms of sediment yield, even a half way properly managed grazing allotment would not contribute sediment quantities over and above natural background levels that would be measurable on a 5th code watershed scale. Significant changes in sediment yield at this scale would become notable in geomorphological changes. The Blue River watershed has a very high level of natural sediment yield, and small increments attributable to allotment management become insignificant. Generally, sediment yields, or more specifically soil erosion rates, are tied to soil ground cover. Low ground cover would yield higher erosion rates, which notably affect soil productivity far before impacts become visible elsewhere. However unless soil erosion happens on scales of mass wasting (land slides), the added sediment yield would not be significant on a watershed scale. Sediment, especially fines, can have impacts on fish habitat within perennial stream systems. However, this is more related to adequate sediment handling within the riparian area (PFC), rather than a function of sediment supply. Fine sediments are normally handled in functioning riparian systems by depositing on adequate floodplains during over-bank flooding, while a lack of functioning floodplains can cause fines to remain in the channel and plug gravel substrates. The expected effect this allotment potentially has on sediment yield to the entire Blue River watershed is negligible regarding impacts specific to riparian resources. Contrarily, on a local scale, impacts from grazing management can be more readily seen in terms of bank shearing, impacts to floodplain vegetation, damage to woody species reproduction, etc.

Additive impacts throughout watershed:
Cumulative effects of this allotment in conjunction with all other projects going on in the watershed may have a slight tendency to raise sediment yield. The actual amount of this increase in sediment yield would be indistinguishable from natural background levels of erosion. However, as grazing has potential to impact soils and groundcover on a local scale, it stands to reason that this might become noticeable downstream. Outside of livestock allotments scattered across the entire watershed, other sources of sediment also contribute to total sediment yield, such as unpaved roads and fires. There has been a sizable amount of prescribed fire in the Blue River watershed (Thomas Creek, etc.), as well as wildfire. Fires are known significant contributors of sediment and ash. As the Blue River is currently in Functioning At Risk (upward trend) riparian condition, this added sediment load might impact fish habitat by adding sediment to the river channel. Until the Blue River forms fully functioning and optimal floodplain configurations throughout its length, fine sediment will remain in channels instead of depositing in well-vegetated floodplains. Again, it would be difficult to discern the origin or proportion of fines in the river between natural erosion and anthropogenic or accelerated sources.

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PFC Standard Checklist

District: Clifton Topo Quad(s) _____ Non-riparian? _____
Name of Riparian-Wetland Area: Wild Bunch
Date: 10/25/99 Area/Segment ID: (1) Miles: _____
ID Team Observers: Sitko, Fourt, Subirge

Yes	No	N/A	HYDROLOGIC
		✓	1) Floodplain inundated in "relatively frequent" events (1-3 years) canyonreach - bedrock controlled
		✓	2) Active/stable beaver dams
✓			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
✓			4) Riparian zone is widening or has achieved potential extent
✓			5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
✓			6) Diverse age-class distribution (recruitment for maintenance/recovery)
✓			7) Diverse composition of vegetation (for maintenance/recovery)
✓			8) Species present indicate maintenance of riparian soil moisture characteristics
✓			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
✓			10) Riparian plants exhibit high vigor could be better but for area is ok
✓			11) Adequate vegetative cover present to protect banks and dissipate energy during high flows mostly protected by bedrock
✓			12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS - EROSION DEPOSITION
✓			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy see #5 bedrock controlled
		✓	14) Point bars are revegetating
✓			15) Lateral stream movement is associated with natural sinuosity
✓			16) System is vertically stable
✓			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: see list → alder, scrub willow (baccharis), utr cress, Salix spp. ash, Potr, Judex (alligator), Sumac

Upland: Pied, gray, Quer emory oak, cholla, yucca, mesquite, agave, little blue stem, side oats, Juos,

Remarks

4- regrowth limited due to grazing
5- still upland problems but geology has controlled many impacts
6- could see more regrowth but it is limited by bedrock

- look at air photos to see if adjacent riparian patches look like wild Bunch Sor. - Should be the same as this reach

Summary Determination

Functional Rating:

Proper Functioning Condition	✓
Functional -- At Risk	
Nonfunctional	
Unknown	

Trend for Functional -- At Risk:

Upward	
Downward	
Not Apparent	

Problem(s): - young riparian species are browsed before time to mature

Recommendation: monitor utilization of deciduous woodies, keep livestock out for sake of wtr quality, develop alternative wtr sources away from stream

Time to fix: _____ **Riparian width:** 20 ft

DFC: better wtr quality (no cow poop), more young riparian, more recruitment

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No X

If yes, what are those factors?

____ Flow regulations	____ Mining activities	____ Upstream channel conditions
____ Channelization	____ Road encroachment	____ Oil Field water discharge
____ Augmented flows	____ Other (specify)	

PFC Standard Checklist

District: Clifton Topo Quad(s) _____ Non-riparian? _____
Name of Riparian-Wetland Area: Mud Springs
Date: 11/9/99 Area/Segment ID: Reach 3 + 4 (blowouts) Miles: _____
ID Team Observers: Kowy, Subirge, Sitko

Yes	No	N/A	HYDROLOGIC
	✓		1) Floodplain inundated in "relatively frequent" events (1-3 years)
		✓	2) Active/stable beaver dams
	✓		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	✓		4) Riparian zone is widening or has achieved potential extent
	✓		5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
	✓		6) Diverse age-class distribution (recruitment for maintenance/recovery)
✓			7) Diverse composition of vegetation (for maintenance/recovery)
✓			8) Species present indicate maintenance of riparian soil moisture characteristics
	✓		9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	✓		10) Riparian plants exhibit high vigor
	✓		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
✓			12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris – but could use more in stream channel

Yes	No	N/A	SOILS - EROSION DEPOSITION
	✓		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
		✓	14) Point bars are revegetating
✓			15) Lateral stream movement is associated with natural sinuosity
✓			16) System is vertically stable
	✓		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian:	Upland:
Driddlebush, velvet ash, walnut Emery oak, little bluestem, side oats grama	See Wildbranch PJ, gray oak, turbinella Cat claw.

Remarks

1) Flood plain has been lost - degradation, channel is blown out
3) everything is blown out - sinuosity is canyon defined by U a straight channel. High flows have hurt w/d ratio
4) Shrinking, losing species, drying up. Flood plain lost as well as bank storage
5) Uplands allowing too much wtr to come thru - probably since turn of century
6 - few matures (remnants), few young, no regeneration
8 - species here indicate riparian soil moisture but this may be disappearing, as evidenced by poor species regeneration
9 - few species here & there but very few on banks. Borders on non-riparian
10 - Not enough wtr
11 - see #9 - very few
13 - channel is blown, no floodplain, high gradient channel cuts cobbles & boulders, all goes straight down channel w/ nothing to slow down
16 - Bedrock control is most spots. Reach 4 seems incised 4-6', but not continue to cut
17 - Peak flows too high, too much for stream to develop floodplain

Summary Determination

Functional Rating:

Proper Functioning Condition	____
Functional -- At Risk	____
Nonfunctional	✓
Unknown	____

Trend for Functional -- At Risk:

Upward	____
Downward	____
Not Apparent	____

Problem(s): Upland wtrshed exclusively has caused erosion. Historic management (grazing) so severe that riparians & upland were denuded. Topsoil lost (will never recover & return to historic riparian area)

Recommendation: Keep unsuitable #s down in future. Damage has been done that is irreversible in uplands. Low Priority area to regain riparian community

Time to fix: Centuries to never **Riparian width:** 50 - 150

DFC: Keep springs in drainage & allow to recharge riparian area. Don't divert all waters for livestock

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No ✓
loss of soil resource can never be replaced in agency.

If yes, what are those factors?

____ Flow regulations	____ Mining activities	____ Upstream channel conditions
____ Channelization	____ Road encroachment	____ Oil Field water discharge
____ Augmented flows	____ Other (specify)	

PFC Standard Checklist

District: Clifton Topo Quad(s) _____ Non-riparian? N
Name of Riparian-Wetland Area: Wild Bunch
Date: 10-25-99 Area/Segment ID: Road up to Reach 1/RII(A) Miles: .75
ID Team Observers: C Kolny T. Subirge, J. Sitko

Yes	No	N/A	HYDROLOGIC
	✓		1) Floodplain inundated in "relatively frequent" events (1-3 years)
		✓	2) Active/stable beaver dams
	✓		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	✓		4) Riparian zone is widening or has achieved potential extent
	✓		5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
	✓		6) Diverse age-class distribution (recruitment for maintenance/recovery)
✓			7) Diverse composition of vegetation (for maintenance/recovery)
✓			8) Species present indicate maintenance of riparian soil moisture characteristics some upland spp. in there. Ephemeral stream
✓			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	✓		10) Riparian plants exhibit high vigor
	✓		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
	✓		12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS - EROSION DEPOSITION
	✓		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
		✓	14) Point bars are revegetating Canyon reach
✓			15) Lateral stream movement is associated with natural sinuosity
✓			16) System is vertically stable Bedrock controlled, now
	✓		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: See notebook list	Upland:

Remarks

(1) - Incised channel, blown - braided. lots of cobble - no FP
(3) W:D most blown. Wider canyon reach - sinuosity & gradient often determined by canyon but obvious signs of high flow & no structure impact
(4) - While there are deciduous rip. woodies, seems there are much fewer than there should be. Narrowing
(5) Signs of upland watershed impact - blown channel
(6) Would observe for 2 of each species but no age-class numbers. Diversity good but numbers limited.
(10) - Browsing observed. no reproduction "Trashed, nuked, plowed under" contributed T. Subirge
(11) Channel morph modified - removed silt/fines.
(12) - System should have FP w/ coarse woodies. Dry riparian may not have depended on CWD. Energy should be dissipated by healthy FP w/ live woodies. But still not high # of woodies currently
(13) Needs functioning FP filled w/ woodies. Incised channel bedload/cobble.
(17) Lots (too many) cobble; flashier floods, fines removed

Summary Determination

Functional Rating:

Proper Functioning Condition	_____
Functional -- At Risk	_____
Nonfunctional	✓
Unknown	_____

Trend for Functional -- At Risk:

Upward	_____
Downward	_____
Not Apparent	_____

historic & present

Problem(s): System experienced upland watershed impacts (overgrazing most likely) lead to higher peak flows, loss of FP incisement & channel, removal of fines, depositing of cobble/boulders (→ braiding)

Recommendation: ~~Improve upland WS~~ This is a good example of a system ruined that will probably not return due to loss of topsoil in watershed

Time to fix: 7 Century **Riparian width:** 75-100'

DFC: Fines deposited (how??) Active FP w/ good diversity & vigor of woodies

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No ✓

If yes, what are those factors?

____ Flow regulations	____ Mining activities	____ Upstream channel conditions
____ Channelization	____ Road encroachment	____ Oil Field water discharge
____ Augmented flows	____ Other (specify)	

✓

PFC Standard Checklist

District: Clifton Topo Quad(s) Harden Cienega Non-riparian? ___
Name of Riparian-Wetland Area: San Fransisco River
Date: 3/15/99 Area/Segment ID: From martinez to Hickey boundary Miles: .5
ID Team Observers: Sitko, Subirge, Walls, Whitten, Winkles, Hanrahan, Chavez

Yes	No	N/A	HYDROLOGIC
X			1) Floodplain inundated in "relatively frequent" events (1-3 years)
		X	2) Active/stable beaver dams
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian zone is widening or has achieved potential extent
	X		5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
X			6) Diverse age-class distribution (recruitment for maintenance/recovery)
X			7) Diverse composition of vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			10) Riparian plants exhibit high vigor
	X		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
		X	12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS - EROSION DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
X			14) Point bars are revegetating
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: Pofr, baccaris, Az Ash, duckweed, SALIX,	**Upland:** Jumo, Prglt, Yuba, Muem
Quem, CAREX, hackberry, Alob, Equisetum, Bermuda Grass,	Acgr, Mimosa
Sycamore, Walnut, Qugr, Rabbit brush, Az Rose, Emory Oak,	
Grey oak	

Remarks

6) could be more middle age class and older, Lot of young
11) not enough, still coming in 5 year old plants right now
5) see road 1 - past grazing, irrigation, agriculture, roads
12) woody debris present especially in higher floodplains
13) not enough for large event, immediate banks do not have enough
14) Bermuda grass willows not adequate yet.
16) can still cut in large events, not during yearly flows
17) bank full flow balanced, large events not balanced.

Summary Determination

Functional Rating:

Proper Functioning Condition	
Functional -- At Risk	x
Nonfunctional	
Unknown	

Trend for Functional -- At Risk:

Upward	x
Downward	
Not Apparent	

Problem(s): See Reach 1. road running along bottom, upland watershed problems, agricultural lands, current grazing.

Recommendation: improve watershed condition, work with agricultural land owners to practice best managment practices

Time to fix: 50-100 yrs **Riparian width:** 400+ ft

DFC : multiple age class species, reestablish vegetation on all banks and point bars

Are factors contributing to unacceptable conditions outside agency's control or management? Yes x No

If yes, what are those factors?

	Flow regulations		Mining activities	x	Upstream channel conditions
	Channelization		Road encroachment		Oil Field water discharge
	Augmented flows		Other (specify) agriculteral land, unsatisfactory ws condition (NM)		

PFC Standard Checklist

District: Clifton Topo Quad(s) Harden Cienega Non-riparian? ___
Name of Riparian-Wetland Area: San Fransisco River
Date: 3/15/99 Area/Segment ID: Martinez ranch to Harden Cienega Miles: 1
ID Team Observers: Hanrahan, Subirge, Sitko, Whitten, Chavez,Twig & Dee Wiinkle

Yes	No	N/A	HYDROLOGIC
X			1) Floodplain inundated in "relatively frequent" events (1-3 years)
		X	2) Active/stable beaver dams
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian zone is widening or has achieved potential extent
	X		5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
	X		6) Diverse age-class distribution (recruitment for maintenance/recovery)
X			7) Diverse composition of vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			10) Riparian plants exhibit high vigor
	X		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
		X	12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS - EROSION DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
X			14) Point bars are revegetating
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: Pofr, Baccaris, SALIX, Quem, CAREX	**Upland:** Jumo, Prglt, Yuba, Muem
Hackberry, Aleb, Equisetum, Bermuda, Sycamore, Walnut	Acgr, Mimosa
Qugr, Roar	

4) Vegetation is establishing , crowding channel, widening
5) River is canyon defined/contained, immediate canyon walls obviously ok but larger watershed Gila NF is degraded. Poor condition extends up to Luna area.
6) have very young and old, but no middle age class
11) bank cover sparse immediately above bankfull
12) river too large for CWD to be effective
13) not for 30 year event, has floodplain and sinuosity
15) canyon confined
17) bankfull fow is balanced but larger flows unbalanced

Summary Determination

Functional Rating:

Proper Functioning Condition	
Functional -- At Risk	X
Nonfunctional	
Unknown	

Trend for Functional -- At Risk:

Upward	X
Downward	
Not Apparent	

Problem(s): upper watershed, agricultural lands, watershed condition, historic and current grazing upstream of Clifton RD.

Recommendation: limited control, USFS does not have control of agricultural lands upstream

Time to fix: 50-100 yrs **Riparian width:** 200 ft

DFC : Multiple age class species, deposit fine sands and silts - at present this size class material still passes through the system

Are factors contributing to unacceptable conditions outside agency's control or management? Yes x No

If yes, what are those factors?

Flow regulations	Mining activities	X	Upstream channel conditions

PFC Standard Checklist

District: Clifton Topo Quad(s) Clifton NE 348NE Non-riparian? No

Name of Riparian-Wetland Area: San Francisco River (also Reach 3: see Remarks)

Date: 3/14/2000 Area/Segment ID: Reach 1: For. bdy to Lopez Spring Miles: Aprox 1.5

ID Team Observers: Nancy Walls, Robert Whitten, Sue Sitko, Tom Palmer, Jim Copeland ,Randal Chavez, Tom Subirge

Yes	No	N/A	HYDROLOGIC
X			1) Floodplain inundated in "relatively frequent" events (1-3 years)
		X	2) Active/stable beaver dams
X	X		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian zone is widening or has achieved potential extent
X	X		5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
X			6) Diverse age-class distribution (recruitment for maintenance/recovery)
X			7) Diverse composition of vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			10) Riparian plants exhibit high vigor
	X		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
	X		12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS - EROSION DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
X			14) Point bars are revegetating
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: Prgl bosques, Baccaris, Erme, Cyda, Poan, Plwr,	**Upland:** Prgl, Gusa, ARIST, Open, Opsp,
Sich, Nigl, Tara, SALIX, EQISETUM, Chli, Alob, Same, Cagi,	Jumo, Pimo, Bocu, Brca, Sema, Erwr, Fosp,
Chna, ARIST, Bohi, Cela,	Acco, Sich,

Remarks

2) no dams present, however beaver (sign) are present
3) sinuosity is ok, but width/depth still too wide, may shrink ¼ of current active channel
4) is currently widening (channel is being pinched down by vegetation)
5) upland watershed is still contributing, NM side has private lands in bad shape, immediately Surrounding canyon looks ok.
6) few mid aged, few remnant mature, good regeneration,
11) needs more terrace and floodplain vegetation of larger size
12) this canyon reach likely doesn't need much coarse woody debris, may not have evolved with lots Wood in river, canyon confined, currently Poan and Prgl supply some cwd, but live vegetation is Greater factor in hydraulic roughness.
13) regeneration mostly 2-3 years to 7 years of age, flattens with flooding
14) 2-3 year old Poan revegetates some point bars
15) canyon confined
16) Lopez well (casing) eroded out 1993, 2 foot diameter steel well casing was 1 ½ feet above Ground, now is 18-20 feet in air
17) still cutting more than depositing, upland watershed must be contributing to hydrograph.

Reach 3: all in Sec 1 of T3S/R30E, length 0.9 miles. Reach covers a tight oxbow where water velo-Cities are lower, and vegetation can better withstand flood events.

Summary Determination

Functional Rating:

Proper Functioning Condition	
Functional -- At Risk	X
Nonfunctional	
Unknown	

Trend for Functional -- At Risk:

Upward	X
Downward	
Not Apparent	

Problem(s): It appears the upper watersheds contribute greatly to instability, though the road up the bottom doesn't help. Overall, hydraulic roughness of the San Francisco river is insufficient to build significant fines in its floodplains. The mesquite bosques of the past are not being sustained as deep fine floodplain soils are not depositing. Floodplain development is lacking or very slow. Aprox energy dissipation now limited by veg at half of potential, and floodplain at ¼ of potential.

Recommendation: Close road, exclude grazing in river, better management of Gila NF, better Management of private lands along SF river in Catron County (NRCS??).

Time to fix: 50-100 years **Riparian width:** 150-200 meters

DFC: Multiple age classes in riparian trees, narrow deep channel, wider riparian zone, more cwd , more bank storage of water, more sedges, more fines depositing, better floodplain development. Riparian vegetation denser, and covering more of riparian zone.

Are factors contributing to unacceptable conditions outside agency's control or management? Yes X No X

If yes, what are those factors?

X	Flow regulations		Mining activities		Upstream channel conditions
X	Channelization		Road encroachment		Oil Field water discharge
	Augmented flows	X	Other (specify)		

Irrigation on NM private lands changes base flow, floodplain restriction / diking, NF management.

PFC Standard Checklist

District: Clifton Topo Quad(s) _____ Non-riparian? No
Name of Riparian-Wetland Area: Mud Springs R
Date: 11.9.99 Area/Segment ID: Reaches 1+3 (springs) Miles: 2.25
ID Team Observers: Sitko, Subirge, Kenny

Yes	No	N/A	HYDROLOGIC
	✓		1) Floodplain inundated in "relatively frequent" events (1-3 years)
		✓	2) Active/stable beaver dams
	✓		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	✓		4) Riparian zone is widening or has achieved potential extent
	✓		5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
	✓		6) Diverse age-class distribution (recruitment for maintenance/recovery) Older classes only - all mature
✓			7) Diverse composition of vegetation (for maintenance/recovery)
✓			8) Species present indicate maintenance of riparian soil moisture characteristics
✓			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	✓		10) Riparian plants exhibit high vigor
	✓		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
	✓		12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris no regen; Sparse mature trees

Yes	No	N/A	SOILS - EROSION DEPOSITION
	✓		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
		✓	14) Point bars are revegetating
✓			15) Lateral stream movement is associated with natural sinuosity
✓			16) System is vertically stable
	✓		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: Sycamore; Canyon grape; Rhus trilobata; silk tassel; Bottle bluestem; Bacc; Anba	**Upland:** See R. II+IV

Remarks

(1) Little if any FP; impacted
(3) Sinuosity canyon defined w:D out of whack
(4) Narrowing - springs boxed & don't flow in channel; FP eroded
(5) See R. II & IV

(10) No regen; springs boxed in - no natural flow
(11) Sparse riparian vegetation. Water table too low; high flows will scour away all veg.

(13) See II & IV
(17) " " "

Summary Determination

Functional Rating:

Proper Functioning Condition ____
Functional -- At Risk ____
Nonfunctional ✓
Unknown ____

Trend for Functional -- At Risk:

Upward ____
Downward ____
Not Apparent ____

Problem(s): See R. II & IV. Reach I has concrete spring box/drinker - only overflow goes in channel; (3) has some pockets of water

Recommendation: Manage springs to allow flow in streamchannel. Not much else - see II & IV.

Time to fix: 100's + **Riparian width:** ____

DFC: See 2 + 4.

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No ✓

See 2 + 4

If yes, what are those factors?

____ Flow regulations
____ Channelization
____ Augmented flows
____ Mining activities
____ Road encroachment
____ Other (specify)
____ Upstream channel conditions
____ Oil Field water discharge

PFC Standard Checklist

District: Clifton Topo Quad(s) _____ Non-riparian? _____
Name of Riparian-Wetland Area: Cienega Creek
Date: 10/26/99 Area/Segment ID: B Miles: _____
ID Team Observers: Sitko, Subrge, Koury

Yes	No	N/A	HYDROLOGIC
		✓	1) Floodplain inundated in "relatively frequent" events (1-3 years) Canyon confined - bedrock - no floodplain
		✓	2) Active/stable beaver dams
✓			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
✓			4) Riparian zone is widening or has achieved potential extent
✓			5) Upland watershed not contributing to riparian degradation Still upland problem but not affecting riparian area - less evidence of Nestoc

Yes	No	N/A	VEGETATIVE
✓			6) Diverse age-class distribution (recruitment for maintenance/recovery)
✓			7) Diverse composition of vegetation (for maintenance/recovery)
✓			8) Species present indicate maintenance of riparian soil moisture characteristics
✓			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
✓			10) Riparian plants exhibit high vigor
✓			11) Adequate vegetative cover present to protect banks and dissipate energy during high flows - bedrock banks need no protection
		✓	12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris doesn't need woody even though there are some in channel

Yes	No	N/A	SOILS - EROSION DEPOSITION
✓			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
		✓	14) Point bars are revegetating
✓			15) Lateral stream movement is associated with natural sinuosity
✓			16) System is vertically stable
✓			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: See list	Upland: see list

Remarks

Summary Determination

Functional Rating:

Proper Functioning Condition	✓
Functional -- At Risk	
Nonfunctional	
Unknown	

Trend for Functional -- At Risk:

Upward	
Downward	
Not Apparent	

Problem(s): bedrock control so ~~the~~ upland impacts have minimal effect on this reach. Wtr quality still being impacted by non pt sources

Recommendation: monitor wtr quality & utilization of young age class riparian

Time to fix: OK **Riparian width:** 5-20 ft

DFC: better wtr quality - in sandy areas, livestock water, eat plants & mark wtr

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No ✓

If yes, what are those factors?

____ Flow regulations	____ Mining activities	____ Upstream channel conditions
____ Channelization	____ Road encroachment	____ Oil Field water discharge ✓
____ Augmented flows	____ Other (specify)	

PFC Standard Checklist

District: Clifton Topo Quad(s) _____ Non-riparian? no - dry system
Name of Riparian-Wetland Area: Cienega Creek
Date: 10/26/99 Area/Segment ID: Road up approx 1/4 to 3/8 mi. up (A) Miles: _____
ID Team Observers: Carolyn Kerry, Sue Sitko, Tom Subinga

	Yes	No	N/A	HYDROLOGIC
*	✓			1) Floodplain inundated in "relatively frequent" events (1-3 years)
			✓	2) Active/stable beaver dams
*		✓		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
*		✓		4) Riparian zone is widening or has achieved potential extent
*		✓		5) Upland watershed not contributing to riparian degradation

	Yes	No	N/A	VEGETATIVE
*		✓		6) Diverse age-class distribution (recruitment for maintenance/recovery)
	✓			7) Diverse composition of vegetation (for maintenance/recovery) Good - see list
	✓			8) Species present indicate maintenance of riparian soil moisture characteristics
	✓			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
*		✓		10) Riparian plants exhibit high vigor
*		✓		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows too few to make a difference
*	✓			12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

	Yes	No	N/A	SOILS - EROSION DEPOSITION
*	✓			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
			✓	14) Point bars are revegetating canyon confined
	✓			15) Lateral stream movement is associated with natural sinuosity
	✓			16) System is vertically stable bedrock controlled
*	✓			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian:	Upland:
See list	

Remarks

(2) F.P not well developed, but not incised much throughout reach, many bedrock controls, large flows do inundate full width of rip. area
(2) Canyon controls sinuosity + gradient, width/depth could improve a
(4) w/d ratio too much channel width, no rip. widening
(5) watershed very reactive, current flows very peaked, historic grazing likely changed w'shd, thin soils, bedrock outcrops common
(6) mostly mature trees, little repro
(10) Vigor seem low, senescence of tips common on ash, fem repro
(12) System depends more on good FP development and live woody veg.
(13) FP not well defined, bedrock may have been covered w/ alluvium on cyclic basis as roots exposed at banks by 3 ft some spots, but bedrock has sign of wear ie cants happen in 50 yrs of exposure
(17) doesn't appear excessive now but 1992 was likely excessive and exasperated by watershed conditions

Summary Determination

Functional Rating:

Proper Functioning Condition	____
Functional -- At Risk	✓
Nonfunctional	____
Unknown	____

Trend for Functional -- At Risk:

Upward	____
Downward	____
Not Apparent	✓

Problem(s): upland watershed changed, causes peak flows, rip species challenged to reestablish, need more fines deposited, need better FP development

Recommendation: Monitor woody rip veg. utilization

Time to fix: -long term- century **Riparian width:** 50 ft

DFC: F, P, good density of rip. woody veg in F.P, better upland watershed cond.

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No ✓

If yes, what are those factors?

____ Flow regulations	____ Mining activities	____ Upstream channel conditions
____ Channelization	____ Road encroachment	____ Oil Field water discharge
____ Augmented flows	____ Other (specify)	

PFC Standard Checklist

District: Clifton Topo Quad(s) _____ Non-riparian? _____
Name of Riparian-Wetland Area: Cienega Creek #4
Date: 10/26/99 Area/Segment ID: _____ Miles: _____
ID Team Observers: Subirge, Sitko, Koury

Yes	No	N/A	HYDROLOGIC
		✓	1) Floodplain inundated in "relatively frequent" events (1-3 years)
		✓	2) Active/stable beaver dams
✓			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region) set by geology
✓			4) Riparian zone is widening or has achieved potential extent canyon reach
✓			5) Upland watershed not contributing to riparian degradation uplands have no effect on this reach wild canyon - slot canyon -

Yes	No	N/A	VEGETATIVE
✓			6) Diverse age-class distribution (recruitment for maintenance/recovery)
✓			7) Diverse composition of vegetation (for maintenance/recovery)
✓			8) Species present indicate maintenance of riparian soil moisture characteristics in slot - not much veg - all bedrock & boulders
		✓	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events - all bedrock - no need for vegetation
✓			10) Riparian plants exhibit high vigor Sideslope trees - in bottom not much present
✓			11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
		✓	12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS - EROSION DEPOSITION
✓			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
		✓	14) Point bars are revegetating
✓			15) Lateral stream movement is associated with natural sinuosity
✓			16) System is vertically stable
✓			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian:	Upland:
See list for lower canyon	See list

Remarks

lo-order vegetation is at toe of talus slope - having on but at its potential

Summary Determination

Functional Rating:

Proper Functioning Condition	✓
Functional -- At Risk	
Nonfunctional	
Unknown	

Trend for Functional -- At Risk:

Upward	
Downward	
Not Apparent	

Problem(s): need a ladder to see rest of reach. Bring big guy along next time to carry

Recommendation: none

Time to fix: 0 **Riparian width:** ~~15~~ 3-45 feet

DFC: there

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No ✓

If yes, what are those factors?

____ Flow regulations	____ Mining activities	____ Upstream channel conditions
____ Channelization	____ Road encroachment	____ Oil Field water discharge
____ Augmented flows	____ Other (specify)	

PFC Standard Checklist

District: Dutton Topo Quad(s) _____ Non-riparian? N
Name of Riparian-Wetland Area: Cherry Creek Cabin down to canyon mouth
Date: 10-26-99 Area/Segment ID: R III Miles: 1.5
ID Team Observers: C. Kozny, T. Subunas, S. Sibbet

Yes	No	N/A	HYDROLOGIC
	✓		1) Floodplain inundated in "relatively frequent" events (1-3 years)
		✓	2) Active/stable beaver dams
	✓		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	✓		4) Riparian zone is widening or has achieved potential extent
	✓		5) Upland watershed not contributing to riparian degradation

Yes	No	N/A	VEGETATIVE
	✓		6) Diverse age-class distribution (recruitment for maintenance/recovery) Not alot of regen. Dominated by mature
✓			7) Diverse composition of vegetation (for maintenance/recovery)
✓			8) Species present indicate maintenance of riparian soil moisture characteristics
✓			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	✓		10) Riparian plants exhibit high vigor
	✓		11) Adequate vegetative cover present to protect banks and dissipate energy during high flows
✓			12) Plant communities in the riparian area are an adequate source of coarse and/or large woody debris

Yes	No	N/A	SOILS - EROSION DEPOSITION
	✓		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody debris) adequate to dissipate energy
	✓		14) Point bars are revegetating
✓			15) Lateral stream movement is associated with natural sinuosity
	✓		16) System is vertically stable
	✓		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Vegetation Species List

Riparian: See Wet/Branch R III - add Desert Willow, NM Locust	Upland: See Wild Branch List + mimosa

Remarks

(1) Incised channel blown, split channel cobble No FP
(3) W.D most blown. Wider canyon reach, sinuosity modified - straight - obvious signs of high flow
(4) Fewer deciduous woodies than there should be. Narrowing
(5) Signs of upland impact - blown channel
(10) Could be better if FP improved w/ increased soil retention
(11) Channel morph changed, silt/fines gone in FP
(12) Not a LWD system, need more big woodies in FP & more sinuous channel
(13) Very little FP - see older terraces, but not current FP
(14) PB's lost - need to get back.
(16) Not at bedrock level yet - not stable
(17) Can't handle peak flows - doesn't have FP veg structure & sinuosity

Summary Determination

Functional Rating:

Proper Functioning Condition ____
Functional -- At Risk ____
Nonfunctional ✓
Unknown ____

Trend for Functional -- At Risk:

Upward ____
Downward ____
Not Apparent ____

Problem(s): See Wild Bunch R II. Flash floods, channel morph out of whack, upland condition poor, overutil by ung. upland & young browse

Recommendation: Loss of topsoil in upland - set up to fail in large events due to loss ↑, overgrazing. Not much you can do

Time to fix: >100+ **Riparian width:** 100-150'

DFC: Fines deposited, floodplain developed, Active FP w/ diverse age classes of woodies

Are factors contributing to unacceptable conditions outside agency's control or management? Yes ____ No ✓

If yes, what are those factors?

____ Flow regulations
____ Channelization
____ Augmented flows
____ Mining activities
____ Road encroachment
____ Other (specify)
____ Upstream channel conditions
____ Oil Field water discharge

WILDBUNCH ALLOTMENT DRAINAGES: CLASSIFICATION AND DESIRED FUTURE CONDITIONS

W. Wall, T. Subirge, L.WhiteTrifaro, J. Chapman
3/17/2006

Drainage Classification

Four types of drainage segments or reaches were delineated for analysis by the specialists on the Wildbunch Allotment (WBA) Interdisciplinary Team on 1/28/06. They are termed ephemeral, xeroriparian, riparian, and fish bearing. These reaches are determined based on geologic/physical features, specifically, sinuosity, gradient, valley width, and stream flow from large tributaries (USDA 2005) and by vegetation type and stature (USFWS 1997).

Attachment 1 is the map delineating reaches by the four types on the WBA. Based on mapping scale, a reach may encompass smaller sections of another drainage type, however reaches must be 50% or more of the type assigned to them. Although reaches shown on the map reflect the dominant type within that reach, the monitoring, application of DFCs, etc. would be applied site specifically.

1. ***Ephemeral Reaches***: These are typically found in the steeper, headwater reaches of drainages. Ephemeral reaches are not connected to shallow water tables. These drainages function solely to collect and transmit water off the uplands, hence, they contain vegetation of the same species and stature as the upland vegetation. Because moisture runs off before any significant amount can be stored, there is no long term beneficial effect to vegetation. Channel morphology (drainage configuration) is highly variable; for this reason, ephemeral drainages are considered with uplands for the environmental analysis (see also DFC section below). Some examples are as follows:

   Dry Prong Canyon
   Upper Hog Canyon
   Uppermost reaches in most drainages

   Unlike the following drainage type reaches, ephemeral drainages are *not* riparian in nature, i.e., they do not contain riparian obligate species, nor do the upland species growing within them exhibit a larger or more vigorous stature because water does not persist in the bottom.

The following three drainage types *are* considered riparian in nature based on a mapping system for western US drainages developed by the U.S. Fish and Wildlife (1997). Reaches that are riparian in nature are defined as:

> Riparian areas are plant communities contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent lotic and lentic water bodies (rivers, streams, lakes, or drainage ways). Riparian areas have one or both of the

following characteristics: **a)** species similar to adjacent areas but exhibiting more vigorous or robust growth forms, and **b)** distinctively different vegetative species than adjacent [upland] areas. Riparian areas are usually transitional between wetland and upland.

For the following drainage type reaches, characteristics of **a)** above apply to *Xeroriparian,* while characteristics of **b)** above apply to *Riparian* and *Fish Bearing.*

2. ***Xeroriparian Reaches***: These are typically found in reaches with lower gradients and wider valley widths where lateral movement of the stream channel and alluvial deposition can take place. This is where water slows and moisture is stored in deeper alluvial soils. The type of vegetation in xeroriparian reaches is the same as in the adjacent uplands, however the plants are able to attain a greater growth form, density or stature than in the uplands as a result of soil moisture storage in excess of that found in uplands. Tree species such as oaks grow to large trunk diameters with large spreading crowns while shrubby species can attain twice the height found on adjacent uplands. While the positive effect on vegetation is from storage of run-on moisture, there is no shallow ground water table that roots can tap into (as one expected in the following two drainage type reaches). Although vegetation is typically not obligate riparian in these reaches, the hydrologic characteristics of channel and floodplain configuration should parallel signs of stability found in wetter reaches. Some examples are:

   Cienega Creek south from cabin for approx. one mile
   Mud Springs Canyon from road crossing north to near lower Mud Springs

   This type of reach is often connected to wetted riparian areas and it often provide travel corridors for wildlife and livestock.

3. ***Riparian Reaches***: These are found where obligate riparian species occur along intermittent or short perennial stretches of the drainage bottom (there may be limited inclusions of xeroriparian). This drainage type is also applied to isolated springs. Presence of surface water is dependent upon subterranean bedrock configuration that allows water retention at relatively shallow depths or actual surfacing of low flows along intermittent sections of the stream course. Some examples are:

   Mud Springs Canyon between Upper and (lower) Mud Springs
   Cienega Creek between Cienega cabin and Upper Cienega Springs
   Seep Spring

   Isolated springs or seeps are critical links between the intermittent or short perennial reaches riparian areas. Both fall under this one drainage type and are of great importance year long to wildlife, fish, birds and livestock.

4. ***Fish Bearing Reaches***: These are defined as drainages known to contain some life stage of fish species. There is perennial surface and ground water, but at times surface flows may be interrupted. Riparian-obligate vegetation is common but may be occasionally be interrupted as well. For WBA this drainage type is found on the main stem of the Blue and San Francisco Rivers and at the mouths of associated tributaries which may provide refuge for fish during high flows.

Desired Future Conditions

Desired Future Conditions or DFCs were developed by the Interdisciplinary Team to reflect conditions necessary for sustainable ecosystem structure and function although it is recognized that unforeseeable events such as wildfire or flooding, where extended or extreme, may require a reassessment of the DFCs. Expected timeframes to achieve DFCs are given, however recovery will also be affected by variability in current condition of reaches and by climate.

DFCs provide a vision or goal to be accomplished over time, but because systems can easily unravel if progress toward necessary conditions is not adequate, timeframes are given. Progress toward desired future conditions will be tracked through monitoring; see the Monitoring Plan in the WBA Project Record. DFCs should be assessed at the sub-basin level (e.g., Indian Creek and Mud Springs Canyon) and at a time scale fitting to the natural disturbance regime (Reeves 2003) such as fire and flood. These measurements should be at the reach to drainage scale for first to third order reaches and at the reach scale for greater than fourth order reaches. Additional information regarding hydrology, vegetation and erosion/deposition for reaches is found in Attachment 2.

Ephemeral Reaches

Like uplands, ephemeral reaches conduct water flow. Velocity may be greater or lesser within the ephemeral reach as compared to uplands. Maintenance of optimum soil surface conditions in both uplands and ephemeral reaches is necessary to limit sediment and erosion. This is a function of soil surface conditions such as slope, infiltration rate, compaction, ground cover, etc. The Watershed/Soil Specialist's Report contains a description of an ecological DFC for uplands which is "(t)he minimum percent of ground cover (plant basal area and litter) will be at a level to prevent accelerated soil loss (i.e., at or above tolerance) as described in the Terrestrial Ecosystem Survey for the Apache-Sitgreaves National Forests." Ephemeral drainages and reaches are often seen as insignificant but they represent a majority of the drainage length in a watershed. Because the function of ephemeral reaches parallels that of uplands, the upland DFC will also be applied to ephemeral reaches. The **expected timeframe** to reach tolerance ground cover in ephemeral reaches across the WBA is within 10 years.

The Interdisciplinary Team determined DFCs specific to each of the other three drainage types which are riparian in nature where management for resilience is critical. Resilience is the ability to recover to the range of conditions that the system experienced before the disturbance (Lugo et al. 1999). Properly functioning riparian systems have: 1) stable stream banks, 2) good water

quality, 3) a high water table, 4) high productivity of terrestrial biomass, 5) accretion of soil organic matter, 6) perennial vegetation, 7) native vegetation), 8) sustained aquatic fauna, and 9) a soil-geologic matrix that promotes water retention and base flows (Obedzinski 2001). Perennial terrestrial biomass should occur in a variety of native species and with a variety of age and size classes (USDA 1987a, USDA 1987b) which is vigorous and able to stabilize banks and dissipate flow energy (Prichard et al, 1998).

In addition, riparian drainage types should have active floodplains or floodprone areas that interact with the drainage channel. Deposition of inorganic or organic alluvium during flooding should be occurring. This includes evidence of substrate sorting above bankfull. Especially in moderate to moderately steep gradients (3-10%), this sorting indicates an ability of localized areas of the floodplain to dissipate flow energy in order for vegetation to take hold and be protected from high energy flows. Sorting of materials, scouring, and deposition will be especially evident around vegetation or other structures of significant size or density. There will likely be a definitive slope break between channel bankfull and the adjacent terrace or valley wall. If flooding is recent, herbaceous plants and sapling/young woody plant will appear "flattened" from flowing water.

The following riparian-in-nature reaches represent only two percent of the WBA but their importance to ecosystem structure and function is far greater, as are their implications for management. It should be noted that movement toward the following DFCs for the following three drainage type reaches is *greatly dependent* on steady progression toward the upland and ephemeral reach DFC for tolerance ground cover.

Xeroriparian Reaches

Channel stability, soil moisture retention, productive terrestrial biomass, accretion of soil organic matter, perennial and native vegetation, soil-geologic matrix that promotes water retention and base flows, and adequate floodplain interaction are necessary for xeroriparian reaches. The following ecological DFCs were identified to meet these needs:

Xeroriparian DFCs

X1. 80% of the linear stream banks (both sides) are in stable condition. Ocular measurements are sufficient.

X2. Diversity of woody age class: all 3 age classes of native woody species must be present and vigorous. These classes are: seedling/sprout, young/sapling, and mature/decadent (Winward 2000).

X3. Deposition of inorganic or organic alluvium during flooding should be occurring above bankfull with evidence of substrate sorting. Sorting of materials, scouring, and deposition will be especially evident around vegetation or other structures of significant size or density. There will likely be a definitive slope break between channel bankfull and the adjacent terrace or valley wall. If flooding is recent, herbaceous plants and sapling/young woody plant will appear "flattened" from flowing water. Relatively flat areas with a substrate dominance of sand and silt should have good ground cover with low compaction. Ocular measurements are sufficient for above description. Entrenchment ratios should be slight to moderate (≥ 1.4).

Properly Functioning Condition: Meets properly functioning conditions, based on the DFC's above.

Table 1. Correlation of DFCs with necessary xeroriparian function

Xeroriparian Function	DFC#	Correlation
Stable stream bank	X1	Provides adequate dissipation of stream energy and indicates effective sediment transport.
Good water quality	X1 – X2	Stability, vegetative cover, root strength, and good buffers provide adequate filtering of sediment.
Soil moisture retention	X1 – X3	Healthy species (vigorous growth) with good composition of riparian obligates indicate a high water table
High productivity of terrestrial biomass	X2 – X3	Healthy species (vigorous growth) with good composition indicate high productivity of biomass
Accretion of soil organic matter	X1 – R3	Production and deposition of organic matter
Perennial Vegetation	X1 – X2	All are perennial species.
Native Vegetation	X1 – X2	All are native species.
Soil-geologic matrix that promotes water retention and base flows	X1 – X3	Production and deposition of organic mater along with a healthy root matrix.
Adequate floodplain interaction	X-5	Indicates adequate dissipation of stream energy and effective sediment transport along with refuge for riparian soil and plant development.

The **expected timeframe** for accomplishment of the above three xeroriparian DFCs is 20 years, *additionally,* by year 10 the seedling/sapling age class of woody species will be present, vigorous, and well represented. The sorting of substrate and recovery of the floodplain is dependent on flow events, but at least one event should occur within the 10 year timeframe to give an indication of present and near future DFC.

Riparian

Well developed hardwood galleries, such as the lower reaches of Johnson Canyon and the Blue River, are dependent on reliable winter and spring flows. Cottonwoods and willows require suitable seed beds for spring germination as the seeds remain viable for less than seven weeks (Minckley 1994). Sycamores, alders, walnut, and ash are also present. The following native, riparian-obligate species currently occur on the allotment, but not all age classes and not all vigorous; their presence supports the potential for desired future conditions: Fremont cottonwood (*Populus fremontii*), narrowleaf cottonwood (*P. angustifolia*), Arizona alder (*Alnus oblongifolia*), sycamore (*Plantanus wrightii*), seep willow (*Baccharis glutinosa*), velvet ash (*Fraxinus velutinus*), sedge (*Carex* spp.), redtop (*Agrostis stolonifera*), deer grass (*Muhlenbergia rigens*), bluegrass (*Poa* spp.).

All of Obedzinski's (2000) riparian function components plus adequate floodplain interaction are necessary for riparian tributaries with perennial to intermittent flows. The following ecological DFCs were identified to meet these needs:

Riparian DFCs

R1. 80% of the linear stream banks (both sides) are in stable condition. Ocular measurements are sufficient.

R2. Diversity of composition: 2 or more native, riparian-obligate woody species *and* 2 or more riparian-obligate herbaceous species must be present and vigorous.

R3. Diversity of species: all 4 age classes of native, riparian-obligate woody species must be present and vigorous. These classes are: seedling/sprout, young/sapling, mature/decadent, and dead (Winward 2000).

R4. Canopy cover over the active channel should be greater than 70% within a riparian woody overstory and this overstory should comprise 50% or greater of the linear component of the reach.

R5. Deposition of inorganic or organic alluvium during flooding should be occurring above bankfull with evidence of substrate sorting. Sorting of materials, scouring, and deposition will be especially evident around vegetation or other structures of significant size or density. There will likely be a definitive slope break between channel bankfull and the adjacent terrace or valley wall. If flooding is recent, herbaceous plants and sapling/young woody plant will appear "flattened" from flowing water. Relatively flat areas with a substrate dominance of sand and silt should have good ground cover with low compaction. Ocular measurements are sufficient for above description. Entrenchment ratios should be slight to moderate (≥ 1.4).

Properly Functioning Condition: Meets properly functioning conditions, based on the DFC's above.

Table 2. Correlation of DFCs with necessary riparian function

Riparian Function	DFC#	Correlation
Stable stream bank	R1	Indicates adequate dissipation of stream energy and effective sediment transport.
Good water quality	R1 - R3	Stability, vegetative cover, root strength, and good buffers provide adequate filtering of suspended sediment and cool temperatures.
High water table	R2	Healthy species (vigorous growth) with good composition of riparian obligate species indicate a high water table
High productivity of terrestrial biomass	R2 – R3	Healthy species (vigorous growth) with good composition indicate high productivity of biomass
Accretion of soil organic matter	R1 - R5	Production and deposition of organic matter
Perennial Vegetation	R2 - R3	All are perennial species
Native Vegetation	R2 - R3	All are native species
Sustained aquatic fauna	R1 - R4	Stable banks, adequate cover, and leaf litter are essential for sustained aquatic fauna
Soil-geologic matrix that promotes water retention and base flows	R2 - R5	Production and deposition of organic mater along with a healthy root matrix
Adequate floodplain interaction	R-5	Indicates adequate dissipation of stream energy and effective sediment transport along with refuge for riparian soil and plant development.

The **expected timeframe** for accomplishment of the above five riparian DFCs is 10 years, *additionally,* by year 5 the seedling/sapling age class of native, riparian-obligate woody species would be present, vigorous, and well represented.

Fish bearing

Direct effects to fish and fish habitat from livestock grazing have been eliminated from these drainage type reaches on all allotments along the length of the Blue and San Francisco Rivers, including the WBA. Livestock grazing still occurs on the WBA and other allotments adjacent to these rivers. As such, fish bearing DFCs are tied to actions at a watershed level scale and recovery of these fish bearing streams is not dependent on any one allotment alone. Accomplishment of these DFCs is dependent on the recovery of tributaries and upland conditions throughout the watershed

It should be highlighted, that achievement of DFCs for aquatic dependent areas is highly dependent on moisture, organic soil development, and upland conditions. The best available science indicates that "...drought conditions are expected to intensify throughout most of the Southwest, due to recent warmer and much drier-than-average conditions" and "(d)rought is likely to persist or intensify over most of the Southwest except for far western Arizona." Additionally, "(t)he forecast for the Colorado River Basin shows that stream flow in Southwestern rivers is expected to be well below average during the spring and summer", i.e., Gila River Basin predicted to be at <50% of average stream flow (Climas 2006). This is not assuming global warming.

The Blue and San Francisco Rivers are high energy systems with variable flows both at the decadal (or more) and seasonal time scales. Because of this, aquatic biotic require high habitat complexity throughout the floodplain. They need refuge sites at all flow levels for local population survival and throughout the river reaches in order to repopulate adjacent reaches or rivers when habitat or local populations are lost from flood, fire, or drought.

Besides being a threatened species, loach minnow are an appropriate representative to indicate necessary habitat components for these fish bearing rivers. As such, the latest proposed Critical Habitat for this species provides appropriate ecological DFCs along with mature healthy riparian areas and good floodplain interaction with the active stream channel.

Fish Bearing DFCs

F1. Hydrograph from Juan Miller gauging station indicates adequate flows (low to spring flows) and appropriate lag time between precipitation events. There is evidence of channel maintaining flows over a ten year period. Since much of the habitat elements were identified between the mid to late 1980s, this flow period may be the best period to reference at present. The hydrograph and field observations indicate that flows do not appear to be affected from upstream management activities.

F2. Field observations do not identify any pollution problems from management activities related to direct pollution or eutrophic conditions from sustained low flows. There are no CWA 303d designated reaches.

F3. In riffle segments of <2.5% gradient, there should be < 20% surface fines of ≤ 8 mm in size measured at low flows between July and March. There should be less than <12% surface fines of ≤ 8 mm in size measured at low flows between April and June.

F4. In riffle segments of <2.5% gradient, gravel to cobble substrates have low (5-25%) amounts of fines within the interstitial spaces of gravel to cobble substrates (embeddedness) between April and June and moderate (25-50%) embeddedness between July and March.

F5. In riffle segments of <2.5% gradient, the seven day average maximum low flow temperature should be less than <25°C between April and June and should be less than ≤29°C between July and March. The maximum diel variation should be ≤ 10°C.

F6. Low gradient reaches (<2.5% gradient) should have:

- a minimum of two low energy off-channel areas/mile (oxbows, backwaters, side channels, ponds),
- a minimum of 25 low flow pools/mile with 1/3 of these pools (8) being ≥ 3ft in depth, and
- a low flow wetted riffle width to depth ratio of <10.

F7. A sample of representative riffle segments having <2.5% gradient will contain an aquatic insect base consisting of mayflies, true flies, black flies, caddisflies, stoneflies, and dragonflies. Total abundance/area should be high for each sample.

F8. A sample of representative riffle segments having <2.5% gradient will contain a dominance of native fish species over non-native fish species.

F9. Large wood is being maintained at a minimum of 10 pieces/ mile >12"diameter >35 ft length. This is assuming a 50% linear forested channel. Minimum pieces of wood would increase proportionately with an increase of linear forest channel. There are also adequate sources of large wood recruitment within the riparian area.

Table 3. Correlation of DFCs with necessary habitat elements of small minnow rivers

Habitat Element (proposed CH for loach minnow (LM)	LM element	DFC#	Correlation
Perennial water with complexity of flows ranging from near still water to 3 ft/s at low flow.	1	F1, F6, F9, R2-R3	An appropriate hydrograph indicates adequate perennial flows. Channel complexity provides variable flow rates from roughness provided by large wood, gravel bars, and root structure from a healthy mature riparian area.
Waters are unpolluted	1	F2, R2-R3	Field assessments and cooperation with DEQ will identify problems with pollution. Healthy riparian buffers.
Gravel, and cobble substrates have low to moderate amounts of surface fines.	2	F3, R1-R3	Measurements of fine surface sediment during the appropriate seasons (spawning and summer low flows). Stable channels with healthy mature riparian areas and adequate floodplain interaction correlate with less fines.
Gravel to cobble substrates have low to moderate embeddedness.	2	F4, R1-R3	Measurements of embeddedness during the appropriate seasons (spawning and summer low flows). Stable channels with healthy mature riparian areas and adequate floodplain interaction correlate with less fines within the substrate.
All habitat elements are in gradients <2.5%	3a	F3-F8,	Measurements will focus on preferred habitat where appropriate.
Water temperatures between 2 and 29°C with natural diurnal and seasonal variation.	3b	F5, R4	Temperature requirements during the critical seasons (spawning and summer low flows). Adequate canopy cover for thermal protection.
Quality habitat complexity consisting of pool, riffle, run, and backwater components.	3c	F6, F9	Measurements of habitat complexity with a focus on riffle and pool quality, with adequate high flow refuge areas. Large wood is important in creating and maintaining habitat complexity.
Abundant aquatic insects consisting of mayflies, true flies, black flies, caddisflies, stoneflies, and dragonflies.	3d	F7, F9, R2-R4	Representative sampling of aquatic insects. Presence of wood substrate with adequate leaf litter along with tempered stream temperature from a healthy mature riparian forest.
Dominant native fish population	4	F6, F8	Representative sampling of native and non-native fish species. Habitat complexity provides more microhabitat for native species.
Refuge habitat during high flows with connectivity to occupied habitat	5	F6, F9	Measurements of habitat complexity with a focus on adequate high flow refuge areas. Large wood is important in creating and maintaining floodplain habitat.
Stable stream bank	2	R1- R3	Indicates adequate dissipation of stream energy and effective sediment transport. Stable stream banks are correlated with healthy mature riparian areas and adequate floodplain interaction.
High productivity of terrestrial biomass	1, 3c	R2-R3	Healthy species (vigorous growth) with good composition indicate high productivity of biomass
Adequate amounts of large wood.	1, 3b	F9, R2-R3	Wood of sufficient size and quantity are necessary for developing and maintaining habitat complexity including decadent age classes in a healthy mature riparian forest.
Adequate canopy cover	3b, 3d	R4	Focus is on density of overstory with adequate stream channel linear distance.
Adequate floodplain	2, 3c,	R5	Indicates adequate dissipation of stream energy and

interaction	5		effective sediment transport along with refuge for riparian soil and plant development. Essential for developing and maintaining habitat complexity.

The **expected timeframe** for accomplishment of the above DFCs is dependent on the frequency and intensity of moisture which may be at best nominal for the near future (10 to 50 years). The fish bearing DFCs are appropriate management objectives to achieve within 10 years, but a definitive attainment of these DFC will likely be within 20 to 100 years assuming present climate conditions.

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Linda White-Trifaro and Tom Subirge
Edits from 2/6/2008

An additional range improvement was added to the Proposed Action, since the Specialists' Reports were completed. This was done to improve livestock distribution, protect sensitive riparian resources (critical areas), and assist in achieving desired conditions.

WHAT: This range improvement practice would consist of selected cutting and placement of large woody debris will occur within riparian drainages (Indian, Cienega, Wildbunch).

WHY: Changes in grazing management alone (present pasture rotation plan) may not ensure sufficient changes in drainage functionality (i.e. large woody debris for roughness, establishment of pivotal herbaceous components).

OBJECTIVE: The objective would be to improve drainage system functionality by having woody debris act as barriers or impediments to livestock use and trailing, and to enhance establishment of riparian woody and herbaceous obligate species. In addition, this will help trap sediment, establishment of seedlings, and protect new plants from grazing.

EXPECTATIONS: In the Proposed Action, the grazing utilization standard in riparian areas is no more than 35%. Where large woody debris is placed, thereby cutting off access to drainages, the utilization is expected to be lower. Therefore within the Indian, Cienega and Wildbunch drainages, a variable pattern of utilization ranging from 0 to 35% would occur.

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Recovery rate for riparian drainages is expected to be more rapid because of dependable surface and subsurface flows. Managed as "critical areas", planned timing and duration of grazing and success at various management techniques (fencing, debris jams and deterrents, etc.) within these reaches should show marked, measurable recovery and improved herbaceous plant density and vigor. The expected timeframes for observing improved trend and condition for R2 is within the first full repetitive grazing cycle (3-5 years). R1, R3, and R5 are expected to be clearly measurable in the first 5 year period of project implementation, given the expected one flow event during this cycle. While achieving complete functionality of riparian DC's may take 20 years or more, by year needs tracking closer than decades 10 the first 3 age classes of riparian woody species should be present, vigorous, and well represented. Sorting of substrate and recovery of the floodplain, highly dependent on flow events, should be visible and documented . Canopy closure (R4) will be dependant on establishment and viability of woody species, and a substantive improvement (10- 15% cover increase) is expected within the 10 year period.

Historic livestock grazing, lack of natural disturbance such as fire, and change in hydrology of adjacent riverine corridors (Blue and San Francisco rivers) has disrupted riparian function of drainages within the allotment. Current grazing management (as defined in alternatives) is not correcting loss of function in many riparian drainages, and continues to adversely impact riparian ISSUE dependent species on the allotment. Changes in grazing management alone (present pasture rotation plan) may not ensure critical changes in drainage functionality (i.e. large woody debris for roughness, establishment of pivotal herbaceous components).

Indian Spring and Creek: Under Alternatives 1 and 4 the wetland spring at the head of Indian and portion of wetlands immediately down canyon are proposed for livestock exclusion fencing with alternate water sources and lanes provided to ensure effective water availability during use periods. Fencing of a portion of wetland areas will also provide a baseline measure of riparian improvement rates. Trail access into and out of Indian canyon must be ensured for effective livestock movements and distribution. Substantial placement of woody debris (from invasive woodland species adjacent to the drainage) will also be used to reduce cattle trailing and use of this critical area.

*Woody Debris Barriers: One key component missing in most riparian and xero riparian reaches is down, woody material. Woody material functions to change gradient at a very localized scale where fines and sediments are trapped that can enable re-establishment of both herbaceous and woody obligate species. Selected removal and placement of woody debris using encroached live smaller diameter junipers (< 16") and pinyon pine (< 12") will be accomplished along riparian and xeroriparian reaches of Indian, Upper Cienega, and Wildbunch canyons.
Selected placement of woody debris in Indian Creek will be completed over about 1.5 miles along the upper drainage system beginning below the existing trap at Indian Spring, and extending past the junction of Oak Canyon. Felling to remove encroached junipers will be extensive linearly, but not spatially. Only trees directly adjacent to the incised drainage will be felled to increase woody debris jams, decrease livestock access and trailing within the incised drainage corridor, and reduce competition with existing and re-established woody riparian obligate tree species. Felling and placement of woody debris will act as temporary barriers for livestock access, greatly reducing the need for a significant amount of expensive fencing, both to construct and maintain.
Selected placement of woody debris within Upper Cienega drainage, both within Roan Cow and South Pasture, will also reduce the amount of fencing needed initially to allow xero riparian reaches to recover and greatly reduce access to live riparian areas. Access to water points will be enabled by placement of debris, as well as selected fencing with lanes for water points.
Selected placement of woody debris within Wildbunch canyon will be done to compliment existing debris logjams that are resulting in establishment of riparian woody obligates. Placement in Wildbunch, as in Upper Cienega, will be much less extensive than Indian.

The proposed grazing program of using two (2) winter dormancy pastures, creation of an effective summer pasture program, along with use of North pasture as a swing unit, provides both time for recovery following cool and warm season defoliations in summer

units, and successive spring-summer recovery periods for two of three critical riparian corridors on the allotment. Exclusion fencing combined with debris jams in Upper Cienega riparian reaches in Roan Cow and north part of South pasture can provide effective protection for recovery of these critical wetland areas. Planned rest with improvements of fencing and water developments in both pastures is expected to result in substantial increased vigor and establishment of key herbaceous species such as Deer grass in all wetland and riparian corridors.

Planned grazing of Indian/Oak pasture during spring months will have an impact on cool season species, but recovery is expected each year assuming that all livestock are removed by May 1 each year. It is expected that debris jams would reduce the impact on cool season woody obligate species along Indian creek, with full recovery and regrowth each year of browsed and grazed plants.

Of all action alternatives, riparian areas are expected to improve the most under Alternative 1 - Proposed Action. Selective thinning and placement of woody debris within all drainages which contain riparian reaches are expected to measurably achieve desired conditions for improving functionality and re-establishment of herbaceous and woody riparian vegetation. It is not expected that riparian recovery would be complete in all riparian areas in 10 years, however the grazing rotation plan allows for rest between grazing periods (more so than the other grazing alternatives) and focuses on using pastures with riparian areas such as Indian/Oak, North/Joe Fritz and Mud Springs during the winter or early spring months.

Alternative 1 would result in continued direct livestock effects on a large portion of interior riparian areas not excluded from livestock. While positive progress in meeting some desired condition objectives in riparian corridors is anticipated, full recovery is not expected. Development of Cienega Well may impact wetland habitat upstream, although actual assessment of effects to surface water from well development is unavailable at the time of this analysis. Well depth is expected to be well below surface water systems as a requirement of permitting by Arizona Department of Water Resources and Department of Environmental Quality resulting in negligible effects on surface water. Riparian livestock exclosures and debris jams (Improvements # 9, 12, 13) would reduce direct effects of livestock to riparian areas in Upper Cienega, Indian Creek, and Wildbunch creeks. While implementation of this alternative may affect individuals of a species, it is not expected to lead to a trend for federal listing or loss of population viability for the Narrow-headed and Mexican garter snakes; lowland leopard frog; Arizona toad; and Arizona alum root if present.

Migratory Bird Species: Alternative 1 would result in more residual forage and grass cover because it has the longest rotations and greatest non use periods as compared to

the other grazing alternatives. Residual standing crop of herbaceous production is needed by Neotropical migratory birds dependent on taller grasses. Riparian exclosures and debris jams would reduce direct livestock disturbance to birds and indirect habitat impacts for birds that are riparian obligate species. While fences can cause some incidental mortality, and this alternative would increase the miles of fences on the allotment, this impact is not considered measurable or significant.

USDA - FOREST SERVICE **GRAZING PERMIT - PART 3** (Reference FSM 2230)	Page **6** of **13** Permittee Number **03-012** Permit Number **03-027**

Special Terms and Conditions

This allotment is determined to be overstocked under current management. Current livestock management is determined to be inadequate to effectively address and improve resource concerns, especially riparian. Grazing strategies will be tailored to address riparian area concerns. Maximum livestock utilization levels within riparian areas is 45% of available herbaceous vegetation.

Management Practices. (List the specific management practices required of the permittee, such as salting, riding and movement of cattle, herding or bedding of sheep; or incorporate into the permit the specific allotment management plan or other document which outlines these practices in detail. If you need additional space, use next page.)

Each year an Annual Operating Plan will be prepared prior to livestock grazing, documenting pasture moves, improvement work, and special projects. Salting in or within 1/4 mile of any riparian area for the purpose of livestock management is prohibited. Allotment Analysis, Inspections, and Production/Utilization surveys will be completed on this allotment at intervals directed in the Apache-Sitgreaves National Forest Land and Resource Management Plan, as amended (FLMP).

Under the Terms of a Memorandum of Understanding partial livestock non-use will occur until range improvements listed under permittee maintenance responsibility have been brought up to FS standards and specifications. Stocking of permitted livestock will occur in increments which will be directly correlated with range improvement maintenance and improved livestock management. Improvements scheduled for maintenance or reconstruction will be specified on a yearlong basis within the Annual Operating Plan and the Memorandum of Understanding.

Other. (List the provisions and requirements deemed desirable pertaining to sheep band sizes, counting, tagging, dye breeding, lambing, bucking, specific fire protection measures, etc.)

5. For Yearlong Permits. All animals 6 months of age or older as of May 30, those which will become 12 months of age during the grazing season (the calendar year), and all weaned animals regardless of age, are counters for which fees must be paid. They will also be counted as to numbers permitted.

(Note: In either of the above cases, animals not weaned that will become 12 moths of age during the grazing season will not be counted provided they are removed from the allotment before they are 12 months old.)

6. Livestock Counting. The permittee will notify the District Ranger at lest 5 days before livestock enter the National Forest System. If requested by the District Ranger, the permittee will present the livestock for counting prior to entry and at any time thereafter during the permitted season. The District Ranger may round up and hold, for counting, all permittee-owned livestock on the allotment.

7. Cultural Resources The permittee, contractor, or operators shall be responsible for the protection from damage by their actions of all the cultural resources so identified by the Forest Service within the affected area. In addition, their actions or the actions of their agents or representatives. The permittee, contractor, or operators shall immediately notify the Forest Service Project Administrator or Contracting Officer if any damage occurs to any cultural resource and immediately halt work in the area in which damage has occurred until authorized to proceed. All provisions of the Region 3 Cultural Resources Damage Assessment Handbook are incorporated by reference herein.

Management Practices.*Continued...)*

The analysis process will be initiated on the Wildbunch Allotment in 1998, to be followed by completion of a revised Allotment Management Plan. Future stocking rates for the Wildbunch Allotment will be based on the level of management prepared and agreed to by both the Forest Service and the grazing permittee at that time.

8. Management Emphasis. Management emphasis is directed at riparian area dependent resources. The Blue River is considered to be a Priority 1 stream for Threatened and Endangered Species. Proper management for Priority 1 streams will be implemented to address causative factors and achieve riparian recovery. Objectives for Priority 1 Riparian Areas are as follows:

(a) Aquatic resources:

(1) Manage for and maintain at least 80% of near natural shade over water surfaces.
(2) Manage for and maintain at least 80% of stream bank total linear distance in stable conditions.
(3) Prevent siltation not to exceed 20% fines in riffle areas.
(4) Maintain 80% of the spawning gravel surface free of inorganic sediment.
(5) Manage for stream temperatures not to exceed 68 degrees F.
(6) Manage for and maintain at least an 80% Biotic Condition Index on all perennial streams.

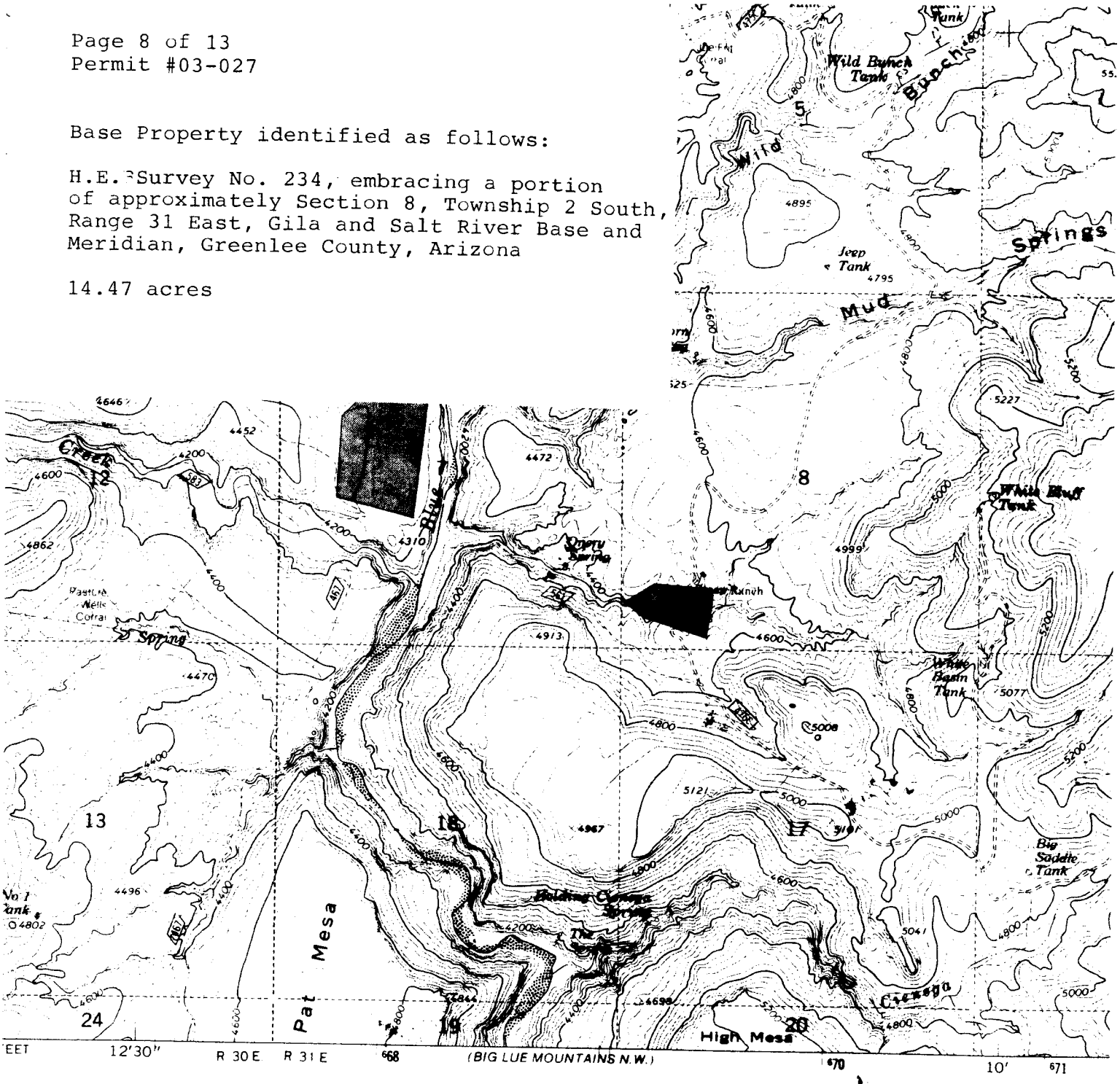
(b) Vegetation resources:

(1) Manage for and maintain at least 60% of the woody plant composition in three or more riparian species.
(2) Manage for and maintain at least three age classes of riparian woody plants, with at least 10% of the woody plant cover in sprouts, seedlings, and saplings.
(3) Manage for an maintain at least 60% near natural shrub and tree crown cover.

Base Property identified as follows:

H.E. Survey No. 234, embracing a portion of approximately Section 8, Township 2 South, Range 31 East, Gila and Salt River Base and Meridian, Greenlee County, Arizona

14.47 acres



USDA--FOREST SERVICE (R-3) RANGE IMPROVEMENTS

INVENTORY & MAINTENANCE RESPONSIBILITY
APACHE-SITGREAVES NATIONAL FOREST
CLIFTON RANGER DISTRICT

Permittee: Carlye and/or Martha A. Cathcart

Allotment Name: Wildbunch
Allotment No: 326

Improvement Name	Kind	Impr. No.	Units	Assignment *
WBUNCH PL VAL FENCE	FENCE, ABF	003078	0.5	WILDBUNCH
WBUNCH SROCK WG FEN	FENCE, ABF	003106	0.1	WILDBUNCH
COPPERAS WBUNCH FEN	FENCE, ABF	R03123	2.5	COPPERAS
CIENEGA PIPELINE	PIPELINE SYST	003150	6.0	WILDBUNCH
WBUNCH HICKEY FEN	FENCE, ABF	OA3392	0.5	WILDBUNCH
WHITE BASIN STK	DAM/RESVOR	003393	6.0	WILDBUNCH
SRCK WBUNCH FEN	FENCE, ABF	R03460	3.0	SANDROCK
SRCK WBUNCH FEN/CGRD	FENCE, ABF	0A3461	0.5	WILDBUNCH
LOAD CHUTE FENCE	FENCE, AI	003470	1.0	WILDBUNCH
LOAD CHUTE COR	CORRAL	003503	1.0	WILDBUNCH
WBUNCH CAN PAST FEN	FENCE, AI	003631	3.1	WILDBUNCH
LOWER W B CORRAL	CORRAL	003632	1.0	WILDBUNCH
WBUNCH COPPERAS FEN	FENCE, ABF	003633	4.0	WILDBUNCH
JOE FRITZ PAS FEN	FENCE, AI	003634	2.6	WILDBUNCH
LITTLE PAS FENCE	FENCE, AI	003635	1.0	WILDBUNCH
HORSE PAS FENCE	FENCE, AI	003636	1.0	WILDBUNCH
CIENIGA HLDG P FEN	FENCE, AI	003637	1.0	WILDBUNCH

*Refer also to map. Your assigned responsibilities as listed here are underscored in color on the map.

USDA--FOREST SERVICE (R-3) RANGE IMPROVEMENTS

INVENTORY & MAINTENANCE RESPONSIBILITY
APACHE-SITGREAVES NATIONAL FOREST
CLIFTON RANGER DISTRICT

Permittee: Carlye and/or Martha A. Cathcart

Allotment Name: Wildbunch
Allotment No: 326

Improvement Name	Kind	Impr. No.	Units	Assignment *
MUD SPRINGS FEN EXT	FENCE, AI	OA3638	0.8	WILDBUNCH
MUD SPG PAS FENCE	FENCE, AI	003638	1.0	WILDBUNCH
INDIAN CREEK CORRAL	CORRAL	003639	1.0	WILDBUNCH
UPPER CIENEGA SPRING	SPRING, DEV	003640	1.0	WILDBUNCH
MORRIS GAP CORRAL	CORRAL	003641	1.0	WILDBUNCH
SEEP SPRING CORRAL	CORRAL	003642	1.0	WILDBUNCH
SALT GROUND CORRAL	CORRAL	0A3643	1.0	WILDBUNCH
CIENEGA CR COR #2	CORRAL	003644	1.0	WILDBUNCH
MUD SPRINGS CORRAL	CORRAL	003645	1.0	WILDBUNCH
HOG CANYON SPRING	SPRING, DEV	003646	1.0	WILDBUNCH
CIENEGA COR CABIN	CABIN	003647	10.0	WILDBUNCH
LOWER IND CORRAL	CORRAL	003648	1.0	WILDBUNCH
HIGH MESA STK	DAM/RESVOR	003649	6.0	WILDBUNCH
S G CANYON STK	DAM/RESVOR	003650	6.0	WILDBUNCH
ZUMWALT CORNER STK	DAM/RESVOR	003651	6.0	WILDBUNCH
SUNFLOWER SDLE STK	DAM/RESVOR	003652	6.0	WILDBUNCH
BIG BUCKHORN 1 STK	DAM/RESVOR	003655	6.0	WILDBUNCH

*Refer also to map. Your assigned responsibilities as listed here are underscored in color on the map.

USDA--FOREST SERVICE (R-3) RANGE IMPROVEMENTS

INVENTORY & MAINTENANCE RESPONSIBILITY
APACHE-SITGREAVES NATIONAL FOREST
CLIFTON RANGER DISTRICT

Permittee: Carlye and/or Martha A. Cathcart

Allotment Name: Wildbunch
Allotment No: 326

Improvement Name	Kind	Impr. No.	Units	Assignment *
PIGEON WBUNCH FENCE	FENCE, ABF	R03656	0.5	PIGEON
MESQUITE FLAT STK	DAM/RESVOR	003657	6.0	WILDBUNCH
DRY PRONG PAS FEN	FENCE, AI	003658	4.0	WILDBUNCH
LITTLE BUCKHOR STK	DAM/RESVOR	003659	6.0	WILDBUNCH
SEEP SPG MTN STK	DAM/RESVOR	003660	6.0	WILDBUNCH
UPPER HOG CAN STK	DAM/RESVOR	003661	6.0	WILDBUNCH
BASIN TANK	DAM/RESVOR	003662	6.0	WILDBUNCH
WHITE BLUFFS STK	DAM/RESVOR	003663	6.0	WILDBUNCH
WILDBUNCH STK	DAM/RESVOR	003664	6.0	WILDBUNCH
JOE FRITZ PAS STK	DAM/RESVOR	003665	6.0	WILDBUNCH
SEN CANYON STK	DAM/RESVOR	003666	6.0	WILDBUNCH
DRY PRONG STK	DAM/RESVOR	003667	6.0	WILDBUNCH
MORRIS SPRING	SPRING, DEV	003668	1.0	WILDBUNCH
DO NOTHING STK	DAM/RESVOR	003669	6.0	WILDBUNCH
GRASSY MTN STK	DAM/RESVOR	003670	6.0	WILDBUNCH
UPPER OAK SPRINGS	SPRING, DEV	003671	1.0	WILDBUNCH
LOWER OAK SPRINGS	SPRING, DEV	003672	1.0	WILDBUNCH

*Refer also to map. Your assigned responsibilities as listed here are underscored in color on the map.

USDA--FOREST SERVICE (R-3) RANGE IMPROVEMENTS

INVENTORY & MAINTENANCE RESPONSIBILITY
APACHE-SITGREAVES NATIONAL FOREST
CLIFTON RANGER DISTRICT

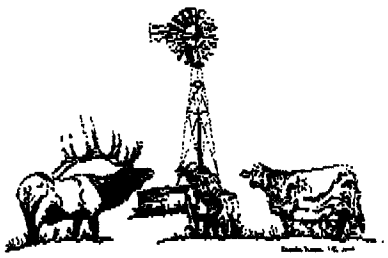
Permittee: Carlye and/or Martha A. Cathcart

Allotment Name: Wildbunch
Allotment No: 326

Improvement Name	Kind	Impr. No.	Units	Assignment *
MUD SPRINGS	SPRING, DEV	003673	1.0	WILDBUNCH
CIENEGA SPG DEV	SPRING, DEV	003674	1.0	WILDBUNCH
SEEP SP DEV	SPRING, DEV	003675	1.0	WILDBUNCH
JEEP STK	DAM/RESVOR	003676	6.0	WILDBUNCH
BLACKJACK STK	DAM/RESVOR	003677	6.0	WILDBUNCH
WHITE SADDLE STK	DAM/RESVOR	003678	6.0	WILDBUNCH
BIG SADDLE STK	DAM/RESVOR	003679	8.0	WILDBUNCH
SUICIDE STK	DAM/RESVOR	003680	6.0	WILDBUNCH
ROAN COW STK	DAM/RESVOR	003681	6.0	WILDBUNCH
BLOODY CANYON STK	DAM/RESVOR	003682	6.0	WILDBUNCH
MORRIS DAY GAP SPRING	SPRING, DEV	003683	1.0	WILDBUNCH
WILDBUNCH CAN COR	CORRAL	003750	1.0	WILDBUNCH
CBERRY SDL STK	DAM/RESVOR	003769	6.0	WILDBUNCH
LONE TREE MESA STK	DAM/RESVOR	003770	6.0	WILDBUNCH
BIG TANK SERIES STK	DAM/RESVOR	003771	6.0	WILDBUNCH
LOWER HOG CAN STK	DAM/RESVOR	003772	6.0	WILDBUNCH
RIDGE STK	DAM/RESVOR	003773	6.0	WILDBUNCH
WILDBUNCH TRICK T	TRICK TANK	003868	1.0	WILDBUNCH
SPRING CANYON SPRING	SPRING, DEV	007002	1.0	WILDBUNCH
FRITZ SPRING	SPRING, DEV	007005	1.0	WILDBUNCH

*Refer also to map. Your assigned responsibilities as listed here are underscored in color on the map.

UPPER EAGLE CREEK WATERSHED ASSOCIATION



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 Wildbunch Allotment Riparian Restoration 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 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,

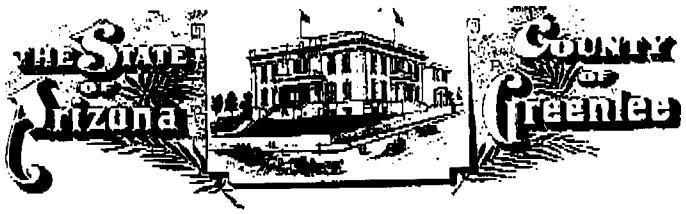
Chase L. Caldwell

Chase L. Caldwell
President

Fax from :

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 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 Gila River Water Conservation Education Program. This grant program is important to our area as we take our water directly from the Gila River and its tributaries. The increasing pressures upon our water supply, from the new mine, the increased population, and the Gila River Indian Water Right Settlement makes it critical that we protect our riparian areas by reducing our water consumption.

I support their efforts to secure these grant funds, and am confident that they will be used in a very worthwhile and efficient manner. These efforts will protect the health of our riparian areas, which will have lifelong benefits for all of us.

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: The Wildbunch Allotment Riparian Restoration project

I am writing this letter to express my support for the Gila Watershed Partnership and their application for grant funding for the *The Wildbunch Allotment Riparian Restoration project.* The project will build a protective exclosure around Indian Creek, Cienega Creek, and Wildbunch Creek riparian areas near their confluence, and provide an alternative water source for the cattle permittee. 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

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 Wildbunch Allotment Riparian Restoration 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 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,

William K. Brandau

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