

**Arizona Water Protection Fund  
Application Cover Page  
FY 2023**

WPF2305

**Title of Project:** Water Crossing Improvements on Unnamed Tributary at Chase Creek 2:  
East Verde Watershed Protection

<b>Type of Project:</b> <input checked="" type="checkbox"/> Capital or Other <input type="checkbox"/> Water Conservation <input type="checkbox"/> Research	<b>Stream Type:</b> <input checked="" type="checkbox"/> Perennial <input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Ephemeral	<b>Your level of commitment to maintenance of project benefits and capital improvements:</b> <input type="checkbox"/> < 5 years <input type="checkbox"/> 5-10 years <input type="checkbox"/> 11-15 years <input checked="" type="checkbox"/> 16-20 years
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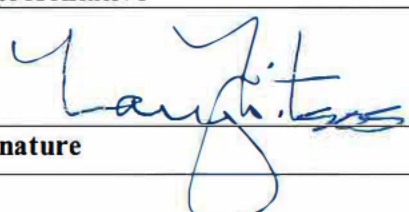
<b>Applicant Information:</b> Name/Organization: National Forest Foundation Address 1: Bldg 27 Ft. Missoula Rd. Address 2: Ste 3 City: Missoula State: Montana ZIP Code: 59804 Phone: 406-542-2805 Fax: 406-542-2810 Tax ID No.: ██████████	<b>Inside an AMA:</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  <b>If yes, which AMA:</b> <input type="checkbox"/> Phoenix <input type="checkbox"/> Tucson <input type="checkbox"/> Prescott <input type="checkbox"/> Pinal <input type="checkbox"/> Santa Cruz
	<b>Type of Application:</b> <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation

<b>Contact Person:</b> Name: Rebecca Davidson Title: Southwest Region Director Phone: 720-749-9008 Fax: e-mail: rdavidson@nationalforests.org	<b>Any Previous AWPf Grants:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  <b>If yes, please provide Grant #(s):</b> 19-197WPF, 20-201WPF, WPF2203
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<b>Arizona Water Protection Fund Grant Amount Requested:</b>  \$181,230.00  If the application is funded, will the Grantee intend to request an advance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Matching Funds Obtained and Secured:</b> <table border="1"> <thead> <tr> <th><u>Applicant/Agency/Organization:</u></th> <th><u>Amount (\$):</u></th> </tr> </thead> <tbody> <tr> <td>1. National Forest Foundation</td> <td>\$20,000.00</td> </tr> <tr> <td>2. Tonto National Forest</td> <td>\$7,906.80</td> </tr> <tr> <td align="right" colspan="2"><b>Total: \$27,906.80</b></td> </tr> </tbody> </table>	<u>Applicant/Agency/Organization:</u>	<u>Amount (\$):</u>	1. National Forest Foundation	\$20,000.00	2. Tonto National Forest	\$7,906.80	<b>Total: \$27,906.80</b>	
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1. National Forest Foundation	\$20,000.00								
2. Tonto National Forest	\$7,906.80								
<b>Total: \$27,906.80</b>									

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.**

Mary Mitsos	President & CEO, 406-542-2805
<b>Typed Name of Applicant or Applicant's Authorized Representative</b>	<b>Title and Telephone Number</b>
	
<b>Signature</b>	<b>Date Signed</b> August 25, 2022

# **Water Crossing Improvements on Unnamed Tributary at Chase Creek 2: East Verde Watershed Protection Executive Summary**

The East Verde River (EV) is a major tributary to the Verde River, one of the largest rivers in Arizona, and a significant contributor to the water supply for the Phoenix metro area. The watershed contains 16.4 miles of perennial streams and 22.3 miles of intermittent streams. Gila trout, a federally listed species under the ESA, are known to occur in the EV Watershed, with recovery populations occurring in Dude Creek, Chase Creek, and an unnamed tributary to Chase Creek 2 (There are two tributaries to Chase Creek; 'Tributary 2' refers to a recovery stream for Gila Trout). Within the watershed, there are approximately 70 miles of road and 11 miles of trail including 9 miles of the iconic 50-mile Highline Trail. This watershed serves as a valuable resource, popular recreation area, and crucial habitat to many aquatic and riparian species.

The EV Watershed is currently classified by the Tonto National Forest (TNF) as "functioning at risk." The primary concerns include lower water quality, degraded in-stream and riparian habitat, and changes in stream channel form and function. In this proposal, the National Forest Foundation (NFF) seeks to enhance the conditions of the EV Watershed by improving water quality and enhancing Gila trout habitat on the Unnamed Tributary to Chase Creek 2. Improvements will include constructing a crossing for pedestrian users (currently hikers and bikers cross the stream directly), and a hardened crossing path for equestrian users and cattle. The proposed projects will prevent erosion and reduce sediment deposition and transport into the Unnamed Tributary at Chase Creek 2, improving stream quality, enhancing Gila Trout habitat, and providing long-term protection to riparian resources.

In 2020, the NFF began addressing water quality concerns in the EV Watershed through partnership with TNF and several community organizations to restore and improve Highline Trail conditions that benefit the surrounding watershed and forest. Trails are an essential facility in our forests, parks, and recreation areas, but can be a conduit for sediment movement. The Highline Trail system plays a significant role in providing access for many recreational opportunities, sustaining substantial traffic from through-hikers, mountain bikers and equestrian riders. However, increased traffic exacerbates issues associated with sedimentation, erosion, and gullyng. Eroded soils from heavy trail use move into water bodies, increasing turbidity and sedimentation which negatively impact aquatic species and water quality.

Trail maintenance and enhancements, such as bridging and tread hardening, are vital to concentrating visitor use impacts, which in turn, limits erosion and protects natural resources. The construction and hardening of these proposed water crossings at Unnamed Tributary to Chase Creek 2 will further reduce sediment into live water, support the ongoing trail work, and increase the sustainability of the EV Headwaters Watershed and habitat. The bridge and hardened crossing are important components of the Tonto National Forest Watershed Restoration Plan and will serve as essential community resources to be used for the public and for natural resource benefit.

# Applications: Water Crossing Improvements on Unnamed Tributary at Chase Creek 2: East Verde Watershed Protection

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## **Profile**

rdavidson@nationalforests.org

## **Project Title**

Water Crossing Improvements on Unnamed Tributary at Chase Creek 2: East Verde Watershed Protection

## **Organization Name**

National Forest Foundation

## **Application Cover Page**

AZ Water Protection Fund Application Cover Page.pdf

## **Executive Summary**

ExecutiveSummaryTemplate\_AWPF\_FY2023.pdf

## **Project Overview**

ProjectOverviewTemplate\_AWPF\_FY2023.pdf

## **Project Location and Environmental Contaminant Information**

ProjectLocation\_EnvironmentalContaminantInformationForm\_AWPF\_FY2023.pdf

## **Scope of Work**

ScopeOfWorkTemplate\_AWPF\_FY2023.pdf

## **AWPF Detailed Budget**

AWPF\_ApplicationDetailedBudgetTemplate.xlsx

## **Matching / Cost Share Budget**

MatchingFunds\_CostShare\_ApplicationDetailedBudgetTemplate.xlsx

## **Arizona Watershed Map**

ArizonaWatershedMapForm\_AWPF\_FY2023.pdf

## **Project Location: Schematic Maps**

Highline\_ChaseTributary2.pdf

## **Project Location: Schematic Maps (cont.)**

Bridge Locations East Verde Watershed.pdf

## **Project Location: Ownership Maps**

USGS 7.5-minute image map for Kehl Ridge, Arizona.pdf

## **Project Location: Ownership Maps (cont.)**

## **State Historic Preservation Office (SHPO) Review Forms**

StateHistoricPreservationOfficeForms\_AWPF\_FY2023.pdf

## **State Historic Preservation Office (SHPO) Review Forms (cont.)**

2022-071\_ChaseCreekBridge\_ISA\_digital\_signed.pdf

## **State Historic Preservation Office (SHPO) Review Forms (cont.)**

## **State Historic Preservation Office (SHPO) Review Forms (cont.)**

## **State Historic Preservation Office (SHPO) Review Forms (cont.)**

### **Key Personnel**

Rebecca Davidson, NFF- Southwest Region Director, oversees the Northern Arizona Forest Fund and connects with businesses, municipalities, and other funders to elevate the importance of watershed protection. She has over 15 years of experience working on natural resource issues across agencies and jurisdictions, including multi-stakeholder collaboratives. Prior to joining NFF, Rebecca worked as a Senior Analyst in the Salt River Project (SRP) in the Water Rights and Contracts group. She will help raise additional project matching funds from supporting partners, like City of Scottsdale and Phoenix, and assist in administration related to the grant.

Kelly Mott Lacroix, Tonto National Forest, is the Watershed Program Manager and Forest Hydrologist for the TNF. In this position she serves as the specialist for all surface water and groundwater hydrology matters, leads the forest's burned area emergency response, and coordinates the creation and implementation of the forest's watershed restoration action plans (WRAP). Over the past 20 years, Dr. Mott Lacroix has worked on watershed hydrology and water resource management for the Forest Service in Washington DC, the University of Arizona Water Resources Research Center, the ADWR, and the Environmental Law Institute. She will act as the TNF lead for this project, coordinating TNF personnel and collaborating with the NFF to ensure that the Feasibility Study meets information needed to continue working in partnership to implement the Green Valley Creek WRAP.

Angela Abel, Tonto National Forest, is the Recreation Program Manager/Specialist for the Payson Ranger District. Angie has spent the last 19 years of her career working for the USFS. Most of that time has been spent working her way up in Recreation, starting as a Recreation Technician and up to Program Management in order to help improve the Recreational opportunities in her local communities.

Nico Estrada-Stephen P.E., Tonto National Forest, is the Facilities Engineer for the TNF. Nico is responsible for managing maintenance and operations for buildings, bridges, dams, lookout towers and water systems in the TNF. He also provides design, contracting and construction inspection support for civil engineering projects throughout the forest.

### **Key Personnel (cont.)**

### **Project Site Photographs**

Highline\_Chase Creek\_Photos.pdf

### **Project Implementation Plans**

The NFF has obtained initial studies and assessments of the hydrologic, sediment, vegetation, and trail conditions from the Tonto National Forest. These results can be found in the Summary of Findings for Chase Creek Trail Bridge, Payson Area Trail Improvement Project Biological Assessment, and the East Verde River Headwaters Watershed Restoration Action Plan.

Under Task #2, the NFF will work with the U.S. Forest Service engineering team to research and obtain the approved design for the water crossing/bridge structure. The NFF will also procure services of a licensed professional engineer for design of the abutments, once bridge design is obtained. The layout of the hardened crossing will be designed by USFS, in collaboration with partners.

The bridge, abutments and hardened crossing will be installed, constructed and managed by NFF, in partnership with USFS, and with contractors and/or volunteers.

Future monitoring activities and water quality assessments related to the Water Crossing Improvements at the Unnamed Tributary to Chase Creek 2 are laid out in the signed East Verde River Headwaters Watershed Restoration Action Plan. Activities that would be conducted under this plan include repeat analysis of road and trail conditions, monitoring of riparian vegetation and aquatic habitat, and water quality assessment. The Tonto National Forest is the managing entity responsible for long term monitoring and management.

### **Existing Plans / Reports / Information**

Tonto\_NF\_EVHeadwaters\_final\_Nov2021.pdf

### **Existing Plans / Reports / Information (cont.)**

Payson Area Trail Improvement Project BA\_20210219\_No Appendix.pdf

**Existing Plans / Reports / Information (cont.)**

- East Verde River Headwaters Watershed Restoration Action Plan
- Payson Area Trail Improvement Project Biological Assessment
- Hydrologic Report and Summary of Findings for Chase Creek Trail Bridge (attached as additional project information)
- Trail Re-Routes and Maintenance Project Decision Memo (attached as additional project information)

**Letters of Community Support**

AWPF Letters of Support.pdf

**Letters from Entities Pledging Matching Funds**

NFF Letter Pledging Matching Funds.pdf

**Evidence of Control and Tenure of Land**

National Forest Foundation Act.pdf

**Evidence of Control and Tenure of Land (cont.)**

21-CS-11031200-090 Fully signed.pdf

**Project Site Access / Permission to Conduct Work**

The National Forest Foundation was chartered by Congress as the non-profit partner of National Forests. As described in our attached enabling legislation, this allows us to enter into agreements with the U.S. Forest Service to conduct project implementation on Forest lands. The NFF has entered into the attached Challenge Cost Share with the Tonto National Forest to allow the NFF to assist the Forest Service in accomplishing restoration projects on degraded lands and improve trail and watershed conditions on the East Verde River Headwaters Watershed (Payson Ranger District) through shared stewardship.

Specific activities outlined in this Challenge Cost Share include the planning, coordination, oversight, and implementation of collaborative restoration projects including Highline Trail Improvements to benefit the EV Rivers Watershed. With this permission to conduct work on hand, we have access to the Forest Service lands where the work will occur. The easiest access to the water crossing project site at Unnamed Tributary to Chase Creek 2 is the Highline Trail from the Washington Park Trailhead. TNF has provided a letter of support for this project and we have discussed opportunities for implementing future restoration work on the Forest.

**Evidence of Physical and Legal Availability of Water**

TNF Land Use and Management ROD.pdf

**Evidence of Physical and Legal Availability of Water (cont.)****OPTIONAL: Additional Project Information**

Please find additional existing plans and documents attached:

- Hydrologic Report and Summary of Findings for Chase Creek Trail Bridge
- Trail Re-Routes and Maintenance Project Decision Memo

**OPTIONAL: Additional Project Information****OPTIONAL: Additional Project Information****OPTIONAL: Additional Project Information**

Chase Creek Trail Bridge\_hydrorecs.pdf

**OPTIONAL: Additional Project Information**

Trail Reroutes and Maint DM signed.pdf

**OPTIONAL: Additional Project Information****View Budget Worksheet**

## **View Application Goals**

<https://portal.ecivis.com/#/peerGoals/5FCD524D-A29C-47CB-B3E4-F0E67ACE30D6>

## **Applications: File Attachments**

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Trail Reroutes and Maint DM signed.pdf

# **Water Crossing Improvements on Unnamed Tributary at Chase Creek 2: East Verde Watershed Protection Project Overview**

## **Background**

The purpose of the water crossing improvements at Unnamed Tributary to Chase Creek 2 is to reduce sediment loading into an important Gila trout recovery stream from increased pedestrian trail traffic and frequent cattle movement. The project will enhance water quality and advance the goal of improving the existing watershed condition as outlined in the East Verde River Headwaters Watershed Restoration Action Plan (EV WRAP) on the Tonto National Forest (TNF). The East Verde River is a major tributary to the Verde River, one of the largest rivers in Arizona, and a significant contributor to the water supply for the Phoenix metro area. The watershed contains 16.4 miles of perennial streams and 22.3 miles of intermittent streams. Gila trout, a federally listed species under the ESA, are known to occur in the EV Watershed. Recovery populations are currently managed in Dude Creek, Chase Creek, and an unnamed tributary to Chase Creek. The historic Highline Trail spans the watershed, crossing seven perennial or intermittent streams: the East Verde River, Dude Creek, Dry Dude Creek, Mail Creek, East Sycamore Creek and two unnamed tributaries to Chase Creek. Increasing trail traffic from through hikers, mountain bikers and equestrian riders across these creeks exacerbate issues associated with sedimentation, erosion, gullyng, and access. In addition, cattle frequent these crossings furthering water quality concerns and aquatic habitat recovery.

The EV Watershed is noted by the TNF as “functioning at risk”. The primary concerns include water quality, degraded in-stream and riparian habitat, and stream channel form and function. Adding to these concerns is the increasing rate of recreation activities on the Highline Trail in relation to watershed function and sustainability of aquatic and riparian habitat. Trails are active sources of sediment; heavy usage can accelerate erosion, alter channel structure, and lead to aquatic habitat impacts. Many sections of the Highline Trail have been losing tread and are significantly eroded. Conditions have been further exacerbated by uncharacteristically severe wildfires in recent years, resulting in many sections of trail needing heavy maintenance or even reroutes. TNF has identified needing a minimum of five water crossing structures at the following crossings: Horton Creek, Unnamed Tributary to Chase Creek 1, Unnamed Tributary to Chase Creek 2, North Sycamore Canyon, and Webber Creek.

This proposal addresses improvements needed to Unnamed Tributary to Chase Creek 2, which will include a bridge for pedestrian users, and a hardened crossing path for equestrian users and cattle. Recognizing the need to improve trail conditions to benefit the watershed, the NFF, in collaboration with TNF and several community partners, began the *Highline Trail Restoration Initiative* in 2020 to restore the iconic National Scenic Trail for its long-term sustainability and to protect the surrounding watershed landscape. Through this proposal to AWPf, we seek to leverage additional funding needed to build a crossing structure across Unnamed Tributary to Chase Creek 2 and a hardened path for equestrian users and cattle that will help restore this degraded stream crossing in the EV Headwaters Watershed and improve conservation and recreation practices on the Tonto National Forest.

## **Goals**

The goal of this proposed project is to construct a water crossing structure that will prevent erosion and reduce sediment deposition and transport to improve watershed health and quality. A built structure along the Highline Trail at the Unnamed Tributary to Chase Creek 2 will reduce the constant hammering of sediment into the stream from pedestrians and mountain bikers, while an adjacent hardened stream path will allow horses, and cattle to more safely and sustainably traverse the river. This project will aid in protecting the reestablished Gila Trout populations in Chase Creek as well as

increase trail sustainability. Based on USFS Hydrologist and Engineer assessment in 2021, the bridge design will also ensure the least impact from 100-year flood inundation levels, keeping the surrounding forest and its many trail users safe.

### **Objectives**

The objectives of this proposal are to:

1. Prevent erosion downstream and improve watershed health and water quality by constructing and installing a crossing structure at Unnamed Tributary to Chase Creek 2
2. Address additional sediment deposition from horse and cattle use by hardening another crossing downstream
3. Protect recovering Gila trout populations by lowering the turbidity level of the streams where they have been reestablished
4. Provide a safer, more sustainable trail experience for recreational users

### **Statement of Problems/Causes**

Within the EV Headwaters Watershed there are approximately 70 miles of road and 11 miles of trail including 9 miles of the 50-mile Highline Trail. Nearly 20% of trail miles are within 300 feet of intermittent streams and most of the management practices to protect water quality in the EV Headwaters Watershed have been classified as poor. Continued trail use compacts and deposits soil into waterways that directly affect the water quality. The level of turbidity, or sediment load in the stream, is a critical element to water quality. Fine sediments in streams can influence the biological factors of aquatic species and cause physiological disturbances such as feeding and breeding success rates, disease levels, growth rates, and predation rates. The Gila trout recovery population on Chase Creek established by Arizona Game and Fish Department (AZGFD) may be susceptible to higher turbidity levels without a crossing structure to further prevent erosion by trail users.

In addition to sediment deposition caused by trail density and conditions, severe wildfires have caused considerable damage to channel form and function in Chase Creek. There have been six wildfires which have burned portions of the EV Headwaters Watershed since 1970 including the Dude Fire in 1990 and the Highline Fire in 2017. Fires have burned a total of about 60% of the watershed and have in turn caused increases in sedimentation and flooding downstream. The combination of uncharacteristic wildfire behavior and the poor quality of road and trail crossings have aggravated negative impacts on the hydrology and geomorphology of the Tonto Forest streams.

### **Statement of Solutions**

While the East Verde Headwaters WRAP requires an interdisciplinary approach, the installation of this bridge ensures direct benefits to Chase Creek tributaries and habitats. The proposed water crossing structure will eliminate the need for hikers and mountain bikers to traverse through stream channels, therefore reducing erosion and the amount of sediment that goes into streams. A proposed hardened stream crossing structure will allow horses and cattle to also safely and sustainably move across the stream. Proper site investigation, close attention to geomorphic indicators, and a deep understanding of stream channels and watershed function by the TNF hydrologist will help alleviate problems that can arise with crossing construction.

Fish and wildlife concerns, including those involving threatened or endangered species like the recovering Gila trout populations in Chase Creek, will be taken into account when installing this crossing. Structure installation will have no effect on key habitat elements like woody debris, or areas providing refuge to trout. Conservation measures are in place to greatly reduce or eliminate direct impact to Gila trout from construction. Any disturbance to Gila trout will be temporary, short-term, and only incurred during the construction of the pedestrian bridge which will last around 1-3 days during the low flow period. Installation during the low flow period avoids the trout spawning season and eliminates the need for instream work that could suspend even more sediment.

The design of the structure will not impact the geomorphology of the system or reduce impacts to woody recruitment into the stream. The current designs for bridges across streams occupied by federally listed aquatic species have abutments supporting both ends of the bridge secured by rebar resulting in negligible ground disturbance and no displaced bankside material. Designated areas for equipment staging and stockpiling materials will be established away from stream banks further reducing the likelihood of construction activities adding sediment into the stream.

**Statement of Project Years of Benefit to the Resource and General Public**

Although the installation of this bridge and the hardened crossing will be short in time, these crossings will serve as essential community resources to be used indefinitely for public and natural resource benefit. The construction of these structures further reduces sediment into live water, supports ongoing trail work, and increases the sustainability of the EV Headwaters Watershed and habitat. This bridge and hardened crossing are important components of the Tonto National Forest Watershed Restoration Plan and the entire effort across the Highline Trail. This project brings together several community partners who have expressed interest in and are committed to assisting the Tonto NF with restoration efforts in the EV Headwaters Watershed. These partners include, but are not limited to: the NFF, TNF, AZGFD, Trout Unlimited, Mogollon Sporting Alliance, and Arizona Trail Alliance. Improved connectivity of streams and trails will have beneficial effects on riparian species, habitat, and trail users alike.

## Project Location & Environmental Contaminant Information FY 2023

<b>Project Location Information</b>			
1. County: Gila County	2. Section(s): 15	3. Township: 12N	4. Range: 10E
<p>5. Watershed: East Verde River Headwaters</p> <p>6. 8 or 10 Digit Hydrologic Unit Code (HUC): 150602030202</p> <p>7. Name of USGS Topographic Map where project area is located: Kehl Ridge Quadrangle</p> <p>8. State Legislative District: LD 6</p> <p style="padding-left: 20px;">(Information available at: <a href="https://azredistricting.org/districtlocator/">https://azredistricting.org/districtlocator/</a>)</p> <p>9. Land ownership of project area: Tonto National Forest, Payson Ranger District</p> <p>10. Current land use of project area: Federal land/National Forest</p> <p>11. Size of project area (in acres): 0.5 acres</p> <p>12. Stream Name: Unnamed Tributary to Chase Creek 2</p> <p>13. Length of stream through project area: 200 feet</p> <p>14. Miles of stream benefited: 1.5 miles</p> <p>15. Acres of riparian habitat: 0.5 acres will be:</p> <div style="text-align: right; margin-left: 300px;"> <input checked="" type="checkbox"/> Enhanced  <input type="checkbox"/> Maintained  <input type="checkbox"/> Restored  <input type="checkbox"/> Created         </div>			
<p>16. General description and/or delineation for the area of impact of the project within the watershed.            The project will span Unnamed Tributary of Chase Creek 2 (There are two tributaries to Chase Creek; 'Tributary 2' refers to a recovery stream for Gila Trout) in the East Verde Headwaters Watershed along the Highline Trail. The bridge crossing will sit on two terraces next to the small stream and the abutments will be far enough away from the stream to survive a 100-year flooding event. The hardened crossing will be constructed adjacent to the bridge.</p> <p>17. Provide directions to the project site from the nearest city or town. List any special access requirements:            From Payson, AZ, head northeast on AZ-87 N for approximately 2.5 miles. Turn right onto Houston Mesa Rd and continue north for approximately 15 miles to arrive at Washington Park Trailhead. From Washington Park Trailhead, access the Highline Trail and head west on the trail for about 2-3 miles to the project site at Tributary 2 to Chase Creek.</p>			
<b>Environmental Contaminant Location Information</b>			
<p>1. Does your project site contain known environmental contaminants? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:</p> <p>2. Are there known environmental contaminants in the project vicinity? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:</p> <p>3. Are you asking for Arizona Water Protection Fund monies to identify whether or not environmental contaminants are present? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>			

# **Water Crossing Improvements on Unnamed Tributary at Chase Creek 2: East Verde Watershed Protection Scope of Work**

## **TASK # 1**

### **Task Title: Authorizations and Agreements**

#### **Task Description**

The NFF will obtain all necessary agreements and consultation to verify authorizations, clearances, and contracts, and perform any consultations necessary to complete the tasks in this scope of work. This task will begin with a formal meeting with personnel from the Tonto National Forest to discuss project implementation and coordination. Authorizations and agreements will include:

- Copies of SHPO clearance
- NEPA clearance
- Copy of Agreement between NFF and TNF, which allows NFF to perform work on the Highline Trail

**Task Purpose/Objective** Compliance with all local, state, and federal requirements, and insure legal access to the project area for the project term

**Deliverable Description** Copies of all necessary authorizations and agreements needed to implement the Scope of Work

**Deliverable Due Date** Upon award, and prior to initiation of any applicable subcontracted work

**Responsible Personnel** Rebecca Davidson - National Forest Foundation, Kelly Mott LaCroix - Tonto National Forest Hydrologist, Angela Abel – USDA Recreation Program Manager/ Specialist

**Task Cost (rounded to the nearest dollar)** \$3,360.00

## **TASK # 2**

### **Task Title: Layout, Engineering Plans and Geotechnical Design**

#### **Task Description**

NFF will obtain approved designs of the water crossing bridge structure, the abutments, and layout of the hardened water crossing. As such:

NFF will work with the U.S. Forest Service (USFS) engineering team to procure and select an appropriate fabrication entity and obtain the approved design for the water crossing/bridge structure. Inasmuch, NFF will request bids and receive quotes for bridge design and fabrication. Contract will include staging bridge materials in proximity to the project site.

The NFF will also procure services of a licensed professional engineer for design of the abutments, once bridge design is obtained. Contractor area of expertise should focus on Geosynthetic Reinforced Soil Integrated Bridge System design with use of common construction materials. The contractor design will be approved under U.S. Forest Service (USFS) standards prior to construction. The NFF and TNF will review bids, select a contractor, and work with the selected subcontractor to enter into a contract for the design of the abutment.

Finally, NFF will work with USFS and partners to provide layout and design of the hardened water crossing. NFF will procure an implementation contractor, using native materials onsite to construct the hardened water crossing.

All subcontracts will be limited to 5% indirect costs from AWP funds.

**Task Purpose/Objective** Ensure design and layout for each of the structures is complete and approved by USFS.

**Deliverable Description**

- Copy of the finalized bridge design.
- Copy of the finalized abutment design.
- Copy of the finalized hardened crossing layout.

**Deliverable Due Date** Upon completion of Task #1, and no later than April 30, 2023

**Responsible Personnel** Rebecca Davidson - National Forest Foundation, Kelly Mott LaCroix - Tonto National Forest Hydrologist, Angela Abel – USDA Recreation Program Manager/ Specialist, Nico Estrada-Stephen – Tonto National Forest P.E., Facilities Engineer

**Task Cost (rounded to the nearest dollar)** \$35,219.40 (\$359.40 provided as in-kind match)

**TASK # 3**

**Task Title: Abutment Materials Acquisition and Construction**

**Task Description**

Per approved design specifications, NFF will acquire materials needed for the bridge abutments and transport to approved project site. The NFF will provide for on-site training and field support for volunteer crews performing abutment construction and installation activities. The NFF and TNF will establish designated areas for equipment staging and stockpiling materials away from stream banks to reduce the likelihood of construction activities adding sediment into the stream. Labor and equipment necessary for preparing and hauling materials and equipment to project sites to support the volunteer crews will be provided. Crews will construct abutments to design standards to support both ends of the bridge and secure by rebar for negligible ground disturbance and no displaced bankside material.

The NFF will work with USFS to procure helicopter services (Type 3 Helicopter) for abutment materials transport from the helipad to the project site. This task will begin with a formal meeting with personnel from TNF to discuss load, staging, and rates.

**Task Purpose/Objective** Provide for safe a work environment and support field staff and volunteer crews in construction efforts by providing them with the guidance, equipment, and materials they need to perform their jobs efficiently and effectively.

**Deliverable Description** Constructed and installed abutments at the project site outside of MSO breeding season.

**Deliverable Due Date** No later than October 31, 2023

**Responsible Personnel** Rebecca Davidson - National Forest Foundation, Kelly Mott LaCroix - Tonto National Forest Hydrologist, Angela Abel – USDA Recreation Program Manager/ Specialist, Nico Estrada-Stephen – Tonto National Forest P.E., Facilities Engineer

**Task Cost (rounded to the nearest dollar)** \$37,856.40 (\$2,156.40 contributed as in-kind match)

#### **TASK # 4**

##### **Task Title: Bridge Delivery and Installation**

**Task Description** After acquisition of bridge design, fabricated bridge will be delivered to approved staging area, at helibase or at another approved location.

The NFF will work with USFS to procure helicopter services (Type 3 Helicopter) for bridge delivery and transport from the staging area to the project site. This task will begin with a formal meeting with personnel from TNF to discuss load, staging, and rates.

USFS staff and volunteer crews will be onsite to manage and finalize installation activities.

**Task Purpose/Objective** Ensure efficient and safe transportation of the prefabricated bridge from the delivery staging area to the project site. Construct/install bridge.

**Deliverable Description** Prefabricated fiberglass bridge delivered and installed on project site.

**Deliverable Due Date** Upon completion of Task #3, No later than May 31, 2024

**Responsible Personnel** Rebecca Davidson - National Forest Foundation, Kelly Mott LaCroix - Tonto National Forest Hydrologist, Angela Abel – USDA Recreation Program Manager/ Specialist, Nico Estrada-Stephen – Tonto National Forest P.E., Facilities Engineer

**Task Cost (rounded to the nearest dollar)** \$109,341.00 (\$5,391.00 contributed as in-kind match)

#### **TASK # 5**

##### **Task Title: Hardened Water Crossing for Equestrians and Cattle**

##### **Task Description**

Construct a hardened path for equestrian users and cattle, downstream from pedestrian water crossing, that will help restore this degraded stream crossing, reducing sediment into the stream system and protecting Gila trout and other aquatic species. Contractors selected in Task #2 will construct the water crossing using native material (rock from the project site). The expected duration of field work is 3 days for 6-8 hours per day.

**Task Purpose/Objective** Further improve stream degradation and trail erosion by constructing a hardened path to be used for non-pedestrian crossings such as equestrians and cattle

**Deliverable Description** Hardened water crossing for equestrian and cattle crossing downstream

**Deliverable Due Date** Upon completion of Task #4, No later than October 31, 2024

**Responsible Personnel** Rebecca Davidson - National Forest Foundation, Kelly Mott LaCroix - Tonto National Forest Hydrologist, Angela Abel – USDA Recreation Program Manager/ Specialist, Nico Estrada-Stephen – Tonto National Forest P.E., Facilities Engineer

**Task Cost (rounded to the nearest dollar)** \$20,000.00 (Contributed as match by the NFF)

**TASK # 6**

**Task Title: Final Report and Oral Presentation**

**Task Description** The NFF will prepare and submit a comprehensive final report in accordance with AWPf final report guidelines. The report will include a summary the outcomes of all tasks, analysis of project data, a description of lessons learned and future actions, and an evaluation of our success in meeting project objectives. The NFF will provide all information generated from this project, and will make an oral presentation summarizing the final report to the AWPf commission.

**Task Purpose/Objective** Provide a comprehensive final report for public distribution that gives a detailed description of the project, its highlights, and benefits to the State of Arizona.

**Deliverable Description** Final report and oral presentation to the Commission

**Deliverable Due Date** January 31, 2025

**Responsible Personnel** Rebecca Davidson - National Forest Foundation

**Task Cost (rounded to the nearest dollar)** \$3,360.00

*[Add additional Tasks as necessary]*

**NOTE:** This table is provided as a guide to help develop your project budget and AWPF fund grant request. Feel free to modify this table as needed to accurately describe your proposed budget details.

**Arizona Water Protection Fund Grant Application Detailed Budget**

<b>Task 1: Authorizations and Agreements</b>					
	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>	<b>Notes</b>
<b>Direct Labor Costs</b>					
Southwest Region Director	40.00	hrs	\$ 80.00	\$3,200.00	
Direct Labor Subtotal					
<b>Capital Outlay, Equipment, Supplies, Per Diem, Travel, etc.</b>					
<i>(Note: mileage reimbursement is limited to \$0.445/mile)</i>					
Other Direct Subtotal					
<b>Task Subtotal</b>					
<b>Optional: AWPF Administrative Costs (not to exceed 5% of Task Subtotal)</b>				<b>\$160.00</b>	
			<b>Task 1 Total</b>	<b>\$3,360.00</b>	
<b>Task 2: Layout, Engineering Plans, and Geotechnical Design</b>					
	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>	<b>Notes</b>
<b>Direct Labor Costs</b>					
Southwest Region Director	40.00	hrs	\$80.00	\$3,200.00	Bid review and contractor procurement
Direct Labor Subtotal					
<b>Outside Service Costs</b>					









AWPF Fund Request

<b>Task 6: Final Report and Oral Presentation</b>					
	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>	<b>Notes</b>
<b>Direct Labor Costs</b>					
Southwest Program Director	40.00	hrs	\$ 80.00	\$3,200.00	
Direct Labor Subtotal					
<b>Capital Outlay, Equipment, Supplies, Per Diem, Travel, etc.</b>					
<i>(Note: mileage reimbursement is limited to \$0.445/mile)</i>					
Other Direct Subtotal					
<b>Task Subtotal</b>					
<b>Optional: AWPF Administrative Costs (not to exceed 5% of Task Subtotal)</b>				<b>\$160.00</b>	
			<b>Task 6 Total</b>	<b>\$3,360.00</b>	
<b>Arizona Water Protection Fund Grant Application Fund Request</b>				<b>\$181,230.00</b>	

Matching Funds - Cost Share

**NOTE:** This table is provided as a guide to help develop your project budget and matching funds / project cost share budget. Feel free to modify this table as needed to accurately describe your proposed budget details.

**Matching Funds / Cost Share Budget**

<b>Task 2: Layout, Engineering Plans, and Geotechnical Design</b>					
	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>	<b>Notes</b>
<b>Direct Labor Costs</b>					
Direct Labor Subtotal					
<b>Outside Service Costs</b>					
Layout Design of Hardened Crossing by	12.00	hrs	\$ 29.95	\$ 359.40	Hardened crossing layout provided by Partner Volunteers (support by USFS)
Outside Services Subtotal					
<b>Capital Outlay, Equipment, Supplies, Per Diem, Travel, etc.</b>					
Other Direct Subtotal					
<b>Task Subtotal</b>					
			<b>Task 3 Total</b>	<b>\$ 359.40</b>	

Matching Funds - Cost Share

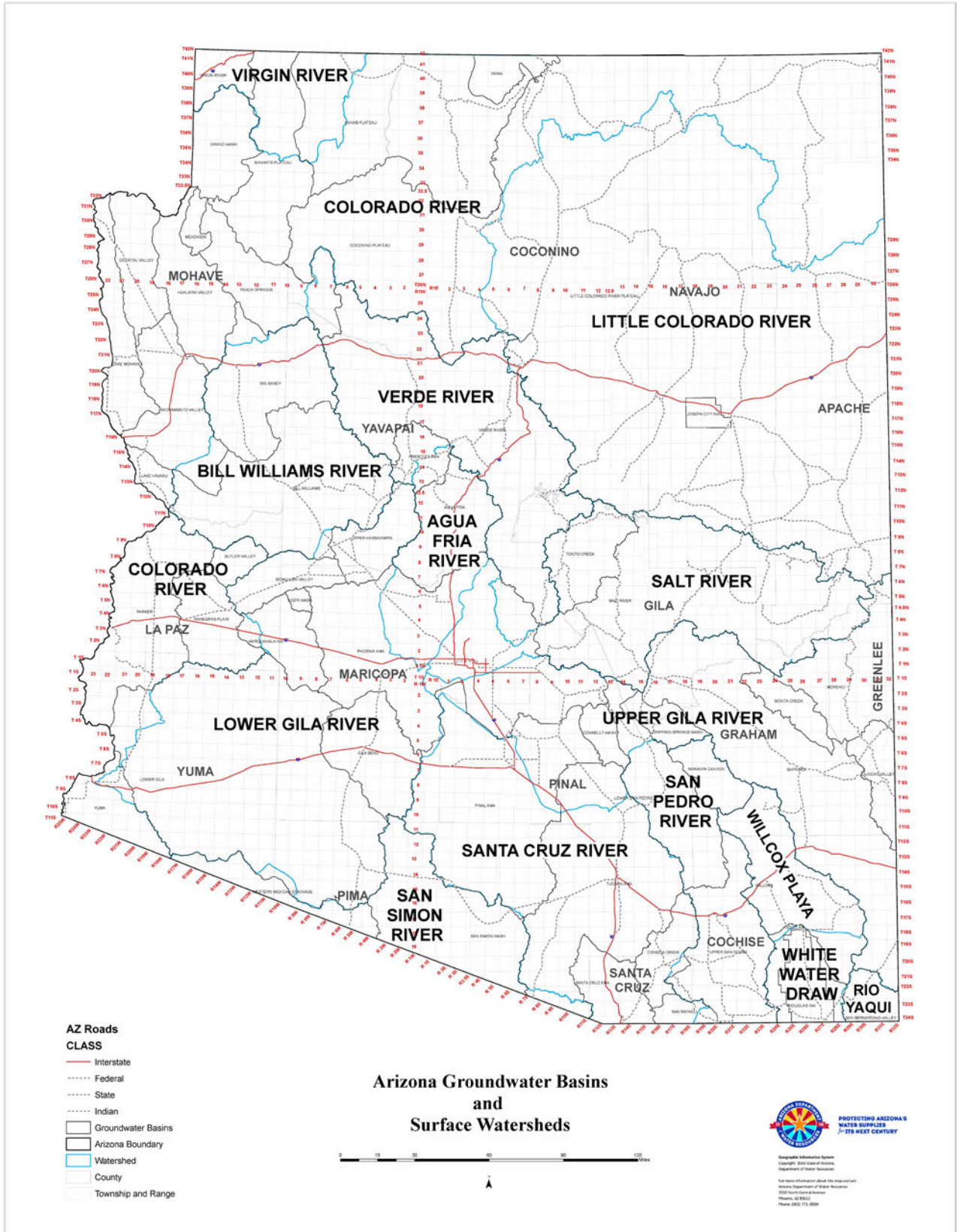
<b>Task 3: Abutment Acquisition and Construction</b>					
	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>	<b>Notes</b>
<b>Direct Labor Costs</b>					
Abutment installment by volunteers and TNF staff	72.00	hrs	\$ 29.95	\$2,156.40	Volunteer time, assuming 2 days, 6 person crew x 6 hour days. Provided as InKind match.
Direct Labor Subtotal					
<b>Capital Outlay, Equipment, Supplies, Per Diem, Travel, etc.</b>					
Other Direct Subtotal					
<b>Task Subtotal</b>					
			<b>Task 3 Total</b>	<b>\$ 2,156.40</b>	
<b>Task 4: Bridge Material Acquisition and Delivery</b>					
	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>	<b>Notes</b>
<b>Direct Labor Costs</b>					
Direct Labor Subtotal					
<b>Outside Service Costs</b>					

Matching Funds - Cost Share

Final installation by USFS staff and volunteer crews	180.00	hrs	\$ 29.95	\$ 5,391.00	Volunteer time, assuming 5 days, 6 person crew x 6 hour days. Provided as InKind match.
Outside Services Subtotal					
<b>Other Direct Costs</b>					
Other Direct Subtotal					
<b>Capital Outlay, Equipment, Supplies, Per Diem, Travel, etc.</b>					
Other Direct Subtotal					
<b>Task Subtotal</b>					
			<b>Task 5 Total</b>	<b>\$ 5,391.00</b>	
<b>Task 5: Hardened Water Crossing for Equestrians and Cattle</b>					
	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>	<b>Notes</b>
<b>Direct Labor Costs</b>					
Direct Labor Subtotal					

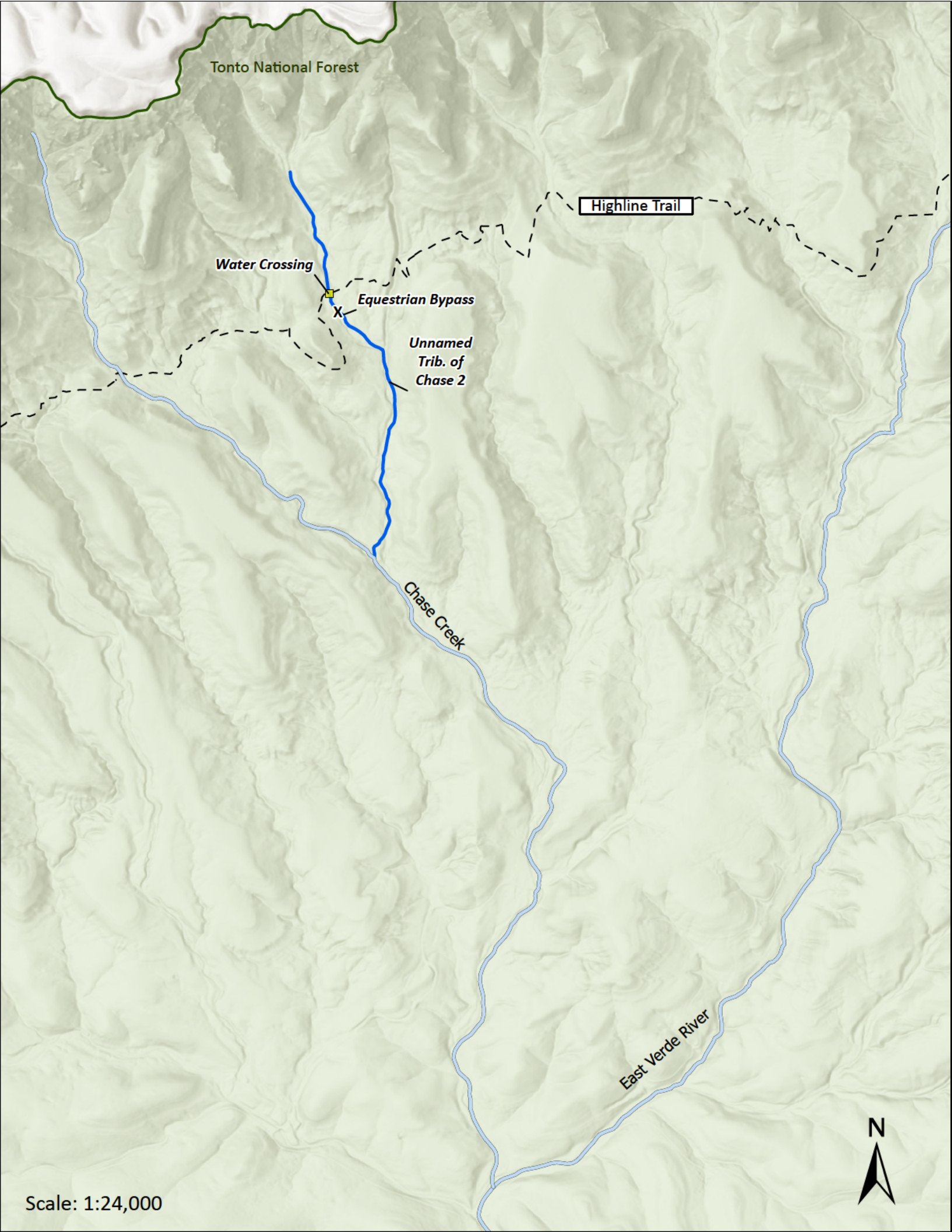


# Arizona Watershed Map FY 2023



**Title of Project:** Water Crossing Improvements on Unnamed Tributary at Chase Creek 2: East Verde Watershed Protection

**Location:** (include UTM's & Township/Range/Section): 12 S 473255.43E 380910.65N;  
 Lat/Long 34.423841, -111.291061; Township 12N/Range 10E/Section 15



Tonto National Forest

Highline Trail

Water Crossing

Equestrian Bypass

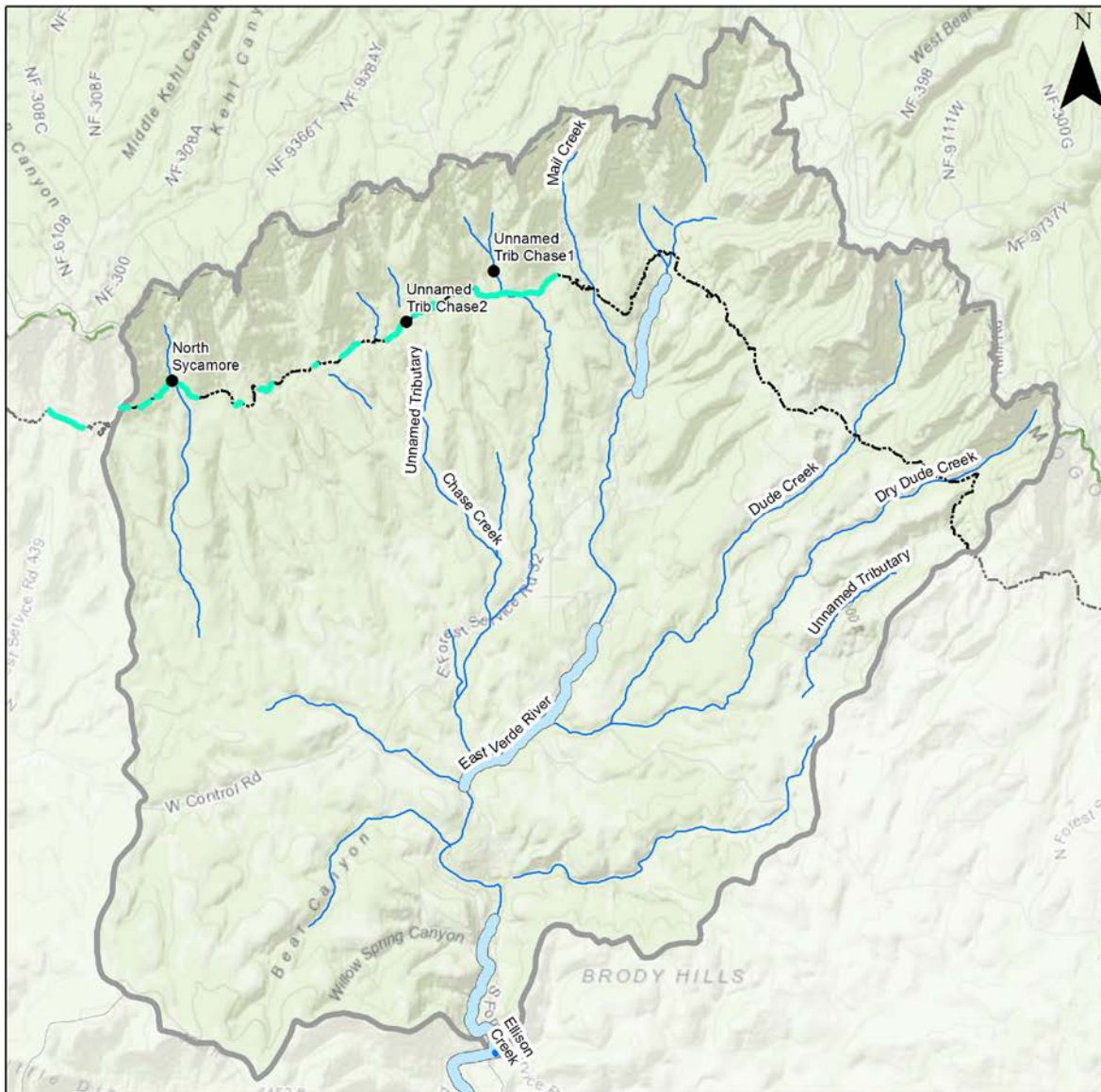
Unnamed Trib. of Chase 2

Chase Creek

East Verde River

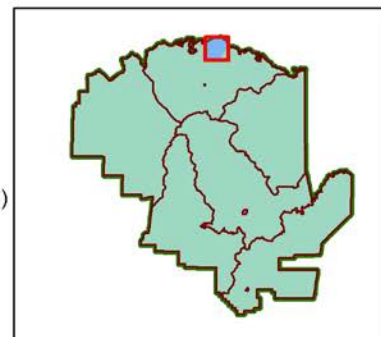


Scale: 1:24,000



**Legend**

- Perennial & Intermittent Streams
- - - - Highline Trail
- Watershed Boundary
- Forest Boundary
- Wildlife Catchment Restoration (EP#10)
- Improved Stream Xing (EP #3)
- Highline Trail Decom. (EP #3)
- Road Decom. (EP#1)
- Stream Habitat Improvement (EP#7, #8, #9)
- Dispersed Camping Restoration (EP #4)
- Bear Canyon RX (EP#6)
- Keger Timber Sale (EP#5)
- Dude Fire Restoration (EP#11)

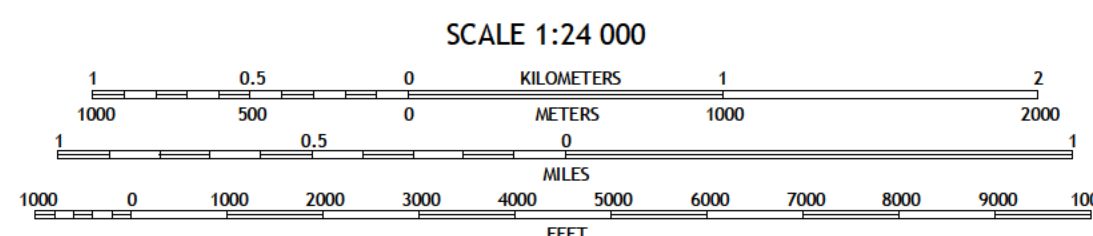
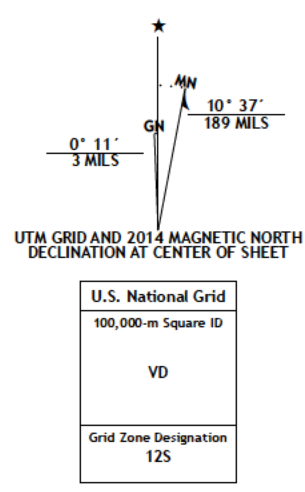




Produced by the United States Geological Survey  
North American Datum of 1983 (NAD83)  
World Geodetic System of 1984 (WGS84). Projection and  
10 000-foot ticks: Arizona Coordinate System of 1983 (central  
and east zones)

This map is not a legal document. Boundaries may be  
generalized for this map scale. Private lands within government  
reservations may not be shown. Obtain permission before  
entering private lands.

Imagery.....NAIP, June 2013  
Roads.....HERE, ©2013  
Roads within US Forest Service Lands.....FS Topo Data  
with limited Forest Service updates, 2013  
Names.....GNS, 2013  
Hydrography.....National Hydrography Dataset, 2013  
Contours.....National Elevation Dataset, 2001  
Boundaries.....Multiple sources; see metadata file 1972 - 2014  
Public Land Survey System.....BLM, 2011



CONTOUR INTERVAL 40 FEET  
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the  
National Geospatial Program US Topo Product Standard, 2011.  
A metadata file associated with this product is draft version 0.6.18



ROAD CLASSIFICATION

Expressway	Local Connector
Secondary Hwy	Local Road
Ramp	4WD
Interstate Route	US Route
FS Primary Route	FS Passenger Route
	FS High
	Clearance Route

Check with local Forest Service unit  
for current travel conditions and restrictions.

1	2	3
4	5	6
7	8	

ADJOINING QUADRANGLES

- 1 Calloway Butte
- 2 Long Valley
- 3 C.C. Crain Reservoir
- 4 Pino
- 5 Dano Canyon
- 6 Backhead Mesa
- 7 Payson North
- 8 Diamond Point

KEHL RIDGE, AZ  
2014



# 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: Arizona Water Protection Fund
2. Project Title: Water Crossing on Unnamed Tributary at Chase Creek 2: Highline Trail Restoration and Watershed Protection
3. Applicant Name and Address:  
Rebecca Davidson, Southwest Region Director  
The National Forest Foundation  
Bldg 27, Ste 3, Fort Missoula Rd  
Missoula, MT 59804
4. Current Land Owner/Manager(s): U.S. Forest Service
5. Project Location, including Township, Range, Section: HUC #150602030202 (Township 12N Range 10E Section 15)
6. Total Project Area in Acres (or total miles if trail, fence line, etc.): 0.5 acres
7. Does the proposed project have the potential to disturb the surface and/or subsurface of the ground?  
 YES  NO
8. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected:  
The proposed water crossing at Unnamed Tributary to Chase Creek 2 will reduce sediment loading into the stream, enhance water quality, and overall advance the goal of improving the existing watershed condition in the East Verde River Headwaters Watershed. The water crossing will span the tributary along the Highline Trail, sitting on two terraces next to the stream and the abutments will be far enough away from

the stream to survive a 100-year flooding event and protect the recovering Gila trout populations in Chase Creek.

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

The watershed above the proposed crossing site is 0.49 square miles and has a mean elevation of 6858 feet. Due to through-hiker, equestrian, and cattle movement, the trail bed near the creek is prone to erosion. This project will prevent erosion of stream banks at the stream crossings, improve the safety of the trail, and provide access during periods of higher flow. Crossings are designed to minimize surface and stream disturbance.

10. Are there any known prehistoric and/or historic archaeological sites in or near the project area?  YES  
 NO
11. Has the project area been previously surveyed for cultural resources by a qualified archaeologist?  YES  
 NO  UNKNOWN

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

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

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

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

**If YES, name of the district:**

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



Applicant Signature \_\_\_\_\_ / 08/26/2022 \_\_\_\_\_  
/Date Applicant Printed Name

**FOR SHPO USE ONLY**

SHPO Finding:

- Funding this project will not affect historic properties.  
 Survey necessary – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)  
 Cultural resources present – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)

SHPO Comments:

For State Historic Preservation Office:

Date:



**STATE OF ARIZONA**  
**HISTORIC PROPERTY INVENTORY FORM**

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

**PROPERTY IDENTIFICATION**

For properties identified through survey: Site No. \_\_\_\_\_ Survey Area: \_\_\_\_\_

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

Address: \_\_\_\_\_

City or Town: \_\_\_\_\_  Vicinity County: \_\_\_\_\_ Tax Parcel No.: \_\_\_\_\_

Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_ Quarters: \_\_\_\_\_ Acreage: \_\_\_\_\_

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

UTM Reference – Zone: \_\_\_\_\_ Easting: \_\_\_\_\_ Northing: \_\_\_\_\_

USGS 7.5' quadrangle map: \_\_\_\_\_

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: \_\_\_\_\_

INVENTORY STANDARDS AND ACCOUNTING

Forest: TONTO

1. REPORT NUMBER: 2022 12 071 | 2. REPORT DATE: 04 22 2022 | 3. RANGER DISTRICT(S): PAYSON

4. AUTHOR: A. Dalton, Clint B.

5. PROJECT NAME/REPORT TITLE: Chase Creek Tributary Bridge Installation on the Highline Trail

6. ABSTRACT/SUMMARY of report and findings: The Payson RD will be installing a bridge spanning a tributary of Chase Creek. Materials are yet to be determined, though location is known and necessary span. A close inspection (100% survey) of the APE, with additional areas beyond the APE, was accomplished April 8th, 2022 by archaeologist Clint Dalton. The bridge sits on two terraces next to the small stream, the abutments or foundations of the bridge are far enough away from the stream to survive a 100 year flooding event. No cultural resources were observed and no historic properties will be affected.

Cont. p. 2

7. CONSULTATION/CLEARANCE

A. TRIBAL CONSULTATION: N/A

B. CONDITIONS OF CLEARANCE: NONE

Cont. p. 2

C. CLEARANCE RECOMMENDED: YES 04/22/2022

D. EFFECT: NO PROPERTIES

E. TRANSMITTAL TO SHPO: Consultation on: Adequacy, Eligibility, Effect, Pursuant to project PA/MOA, Info Only, Annual List only

Acting

LINE OFFICER

Date

F. SHPO CONCURRENCE: YES

SHPO

Date

G. CLEARANCE APPROVED: YES

FOREST SUPERVISOR

Date

8. **Project Function:** Watershed  
 9. **Primary Activity Type:** Inventory: Complete Survey

20. **PROJECT LOCATION:**  
 Quad Map(s):  
 Kehl Ridge

10. **TOTAL PROJECT ACREAGE:** 1  
 No Survey Required  
 11. **ACRES COMPLETELY SURVEYED:** 1  
 12. **Sample:** %  
 13. Acres Previously Surveyed:  
 Acres Not Surveyed:

T. 12N R. 10E Sec. 15  
 T. R. Sec.  
 T. R. Sec.  
 T. R. Sec.  
 T. R. Sec.

14. **TOTAL NO. SITES** 0      18. New 0  
**IN PROJ. AREA:**                      Sites:  
 15. **SITES ELIGIBLE:**  
 16. **SITES NOT ELIGIBLE:**  
 17. **SITES UNEVALUATED:**  
 18. **SITES INSPECTED, MONITORED,**  
**ENHANCED, ETC.:**  
 (Projects other than survey or site evaluation)

21. Organization Conducting Project/Survey:  
 Clint Dalton  
 Name of Permittee/Contractor

22. Average Number Of  
 Individuals Used: 1  
 23. **Average Individual/  
 Transect Spacing:** 5 (Meters)

19. **RECOMMENDED DETERMINATION**  
**OF EFFECT:** (By USFS Professional CRM Specialist)  
 No Effect  
 No Adverse Effect  
 Adverse Effect  
 Not Applicable  
 Beneficial Effect  
 No Historic Properties  
 Initial: CD

24. **FIELD HOURS:** 5  
 25. Lab/Lib Hours: 1  
 26. **ADMIN. HOURS:** 2  
 (RD:      SO: 2 )

**JOB CODE:**

27. **REMARKS/CONTINUATION** from page 1:



**Figure 1: Highline Trail across Unnamed Tributary to Chase Creek 2**



**Figure 2: Gila Trout Recovery Stream Sign at Chase Creek Tributary 2**



**Figure 3: Unnamed Tributary to Chase Creek 2 looking North**



**Figure 4: Unnamed Tributary to Chase Creek 2 looking South**



**Figure 5: Unnamed Tributary to Chase Creek 2 looking East**



**Figure 6: Unnamed Tributary to Chase Creek 2 looking West**

# Shallow Stream Ford

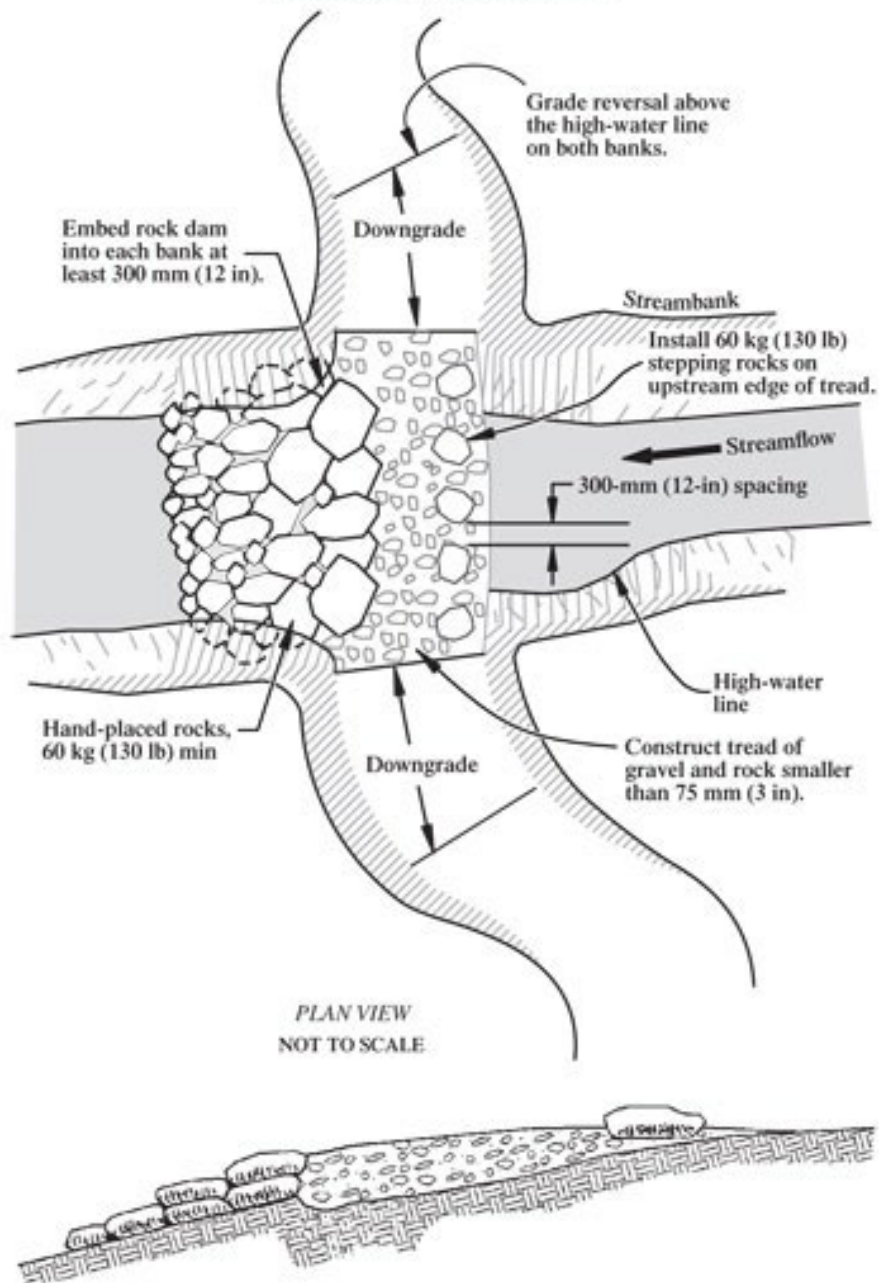
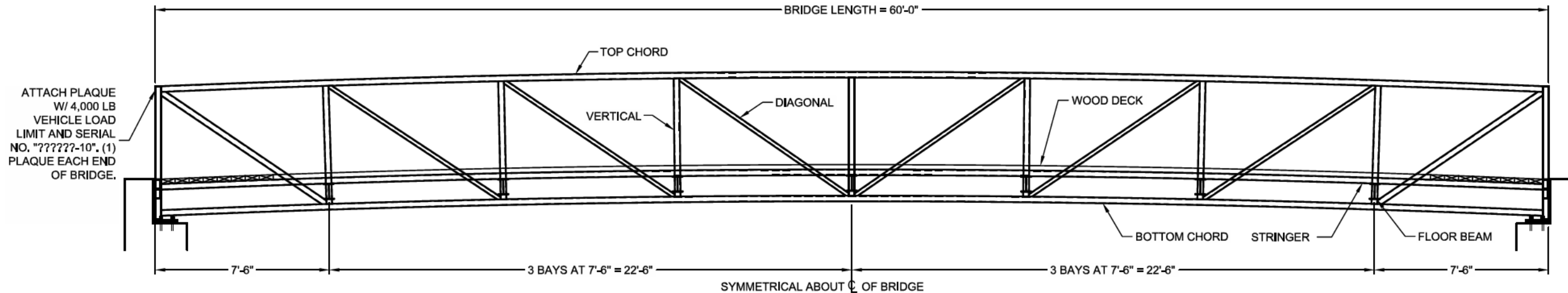


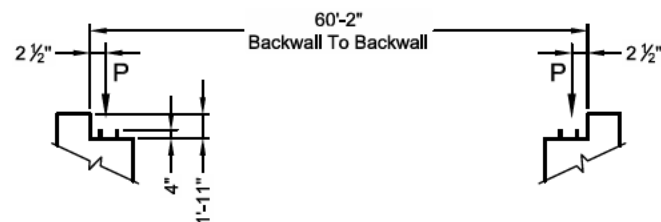
Figure 7: Schematic of Hardened Crossing at Unnamed Tributary to Chase Creek 2



BRIDGE ELEVATION

**GENERAL NOTES**

- DESIGN STRESSES ARE IN ACCORDANCE WITH "STANDARD SPECIFICATION FOR HIGHWAY BRIDGES" & "GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES" BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).
- BRIDGE MEMBERS ARE FABRICATED FROM HIGH STRENGTH, LOW ALLOY, ENHANCED ATMOSPHERIC CORROSION RESISTANT ASTM A847 COLD-FORMED WELDED SQUARE AND RECTANGULAR TUBING, AND ASTM A588, ASTM A606, OR ASTM A242 PLATE AND STRUCTURAL SHAPES (Fy=50,000 PSI).
- BRIDGE DECKING NOMINAL 3 x 12 SELECT STRUCTURAL FIR (Fb=1,400 PSI min.) OR 3 x 10 SOUTHERN YELLOW PINE (Fb=1,300 PSI min.). ALKALINE COPPER QUATERNARY (ACQ) TO A 0.4 PCF RETENTION OR TO REFUSAL OR AZOLE BIOCIDES (MCA) TO A 0.06 PCF RETENTION OR TO REFUSAL.
- THE GAS METAL ARC WELDING PROCESS OR FLUX CORED ARC WELDING PROCESS WILL BE USED. WELDING TO BE IN ACCORDANCE WITH AWS D1.1.
- ALL TOP AND BOTTOM CHORD SHOP SPLICES TO BE COMPLETE PENETRATION TYPE WELDS. WELD BETWEEN TOP CHORD AND END VERTICAL SHALL BE AS DETAILED.
- UNLESS OTHERWISE NOTED, WELDED CONNECTIONS SHALL BE FILLET WELDS (OR HAVE THE EFFECTIVE THROAT OF A FILLET WELD) OF A SIZE EQUAL TO THE THICKNESS OF THE LIGHTEST GAGE MEMBER IN THE CONNECTION. WELDS SHALL BE APPLIED AS FOLLOWS:
  - A. BOTH ENDS OF VERTICALS, DIAGONALS, AND FLOOR BEAMS SHALL BE WELDED ALL AROUND.
  - B. BRACE DIAGONALS WILL BE WELDED ALL AROUND.
  - C. MISCELLANEOUS NON-STRUCTURAL MEMBERS WILL BE STITCH WELDED TO THEIR SUPPORTING MEMBERS.
- BRIDGE DESIGN WAS ONLY BASED ON COMBINATIONS OF THE FOLLOWING LOADS WHICH WILL PRODUCE MAXIMUM CRITICAL MEMBER STRESSES.
  - A. 90 PSF UNIFORM LIVE LOADING ON THE FULL DECK AREA OR ONE 4,000 LB VEHICLE LOAD. THE LOAD SHALL BE DISTRIBUTED AS A FOUR-WHEEL VEHICLE WITH 50% OF THE LOAD ON THE REAR WHEELS. THE WHEEL TRACK WIDTH OF THE VEHICLE SHALL BE 2'-8" AND THE WHEEL BASE SHALL BE 4'-0". THE VEHICLE SHALL BE POSITIONED SO AS TO PRODUCE THE MAXIMUM STRESSES IN EACH MEMBER, INCLUDING DECKING.
  - B. 35 PSF WIND LOAD ON THE FULL HEIGHT OF THE BRIDGE, AS IF ENCLOSED.
  - C. 20 PSF UPWARD FORCE APPLIED AT THE WINDWARD QUARTER POINT OF THE TRANSVERSE BRIDGE WIDTH (AASHTO 3.15.3).
- CLEANING: ALL EXPOSED SURFACES OF STEEL SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACES PREPARATION SPECIFICATIONS NO. 7 BRUSH-OFF BLAST CLEANING, SSPC-SP7-LATEST EDITION.
- MINIMUM MATERIAL THICKNESS OF 1/4" ON ALL STRUCTURAL MEMBERS.



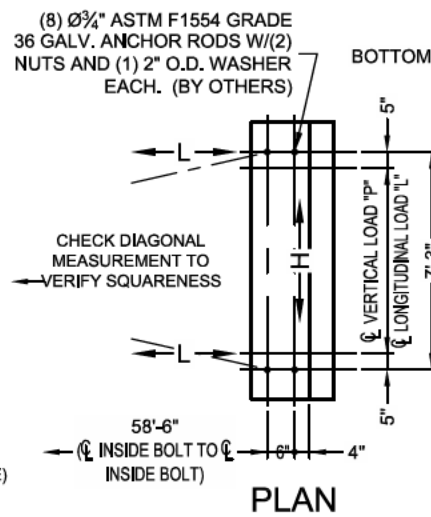
ANCHOR BOLT ELEVATION

COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

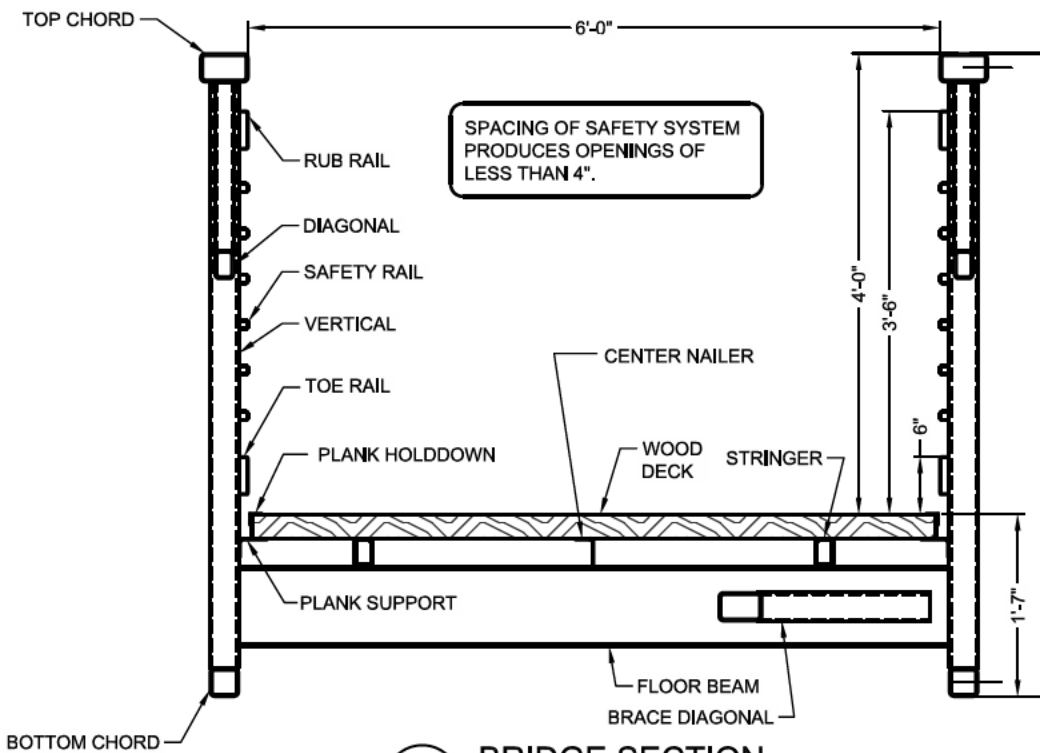
BRIDGE REACTIONS	+ DOWNWARD LOAD - UPWARD LOAD		
	P (LBS)	H (LBS)	L (LBS)
DEAD LOAD	3,450		
UNIFORM LIVE LOAD	8,100		
VEHICLE LOAD	2,000		
WIND UPLIFT 20 PSF		-2,925	-975
WIND	3,060	5,865	
THERMAL			520

"P" - VERTICAL LOAD EACH BASE PLATE (4 PER BRIDGE)  
 "H" - HORIZONTAL LOAD EACH FOOTING (2 PER BRIDGE)  
 "L" - LONGITUDINAL LOAD EACH BASE PLATE (4 PER BRIDGE)

BRIDGE LIFTING WEIGHT: 13,800 LBS



PLAN



BRIDGE SECTION

1  
2

CONTECH  
FABRICATION  
DRAWING



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PROJECT No.: —	SEQUENCE No.: 001

SHEET: 1 OF 1



United States  
Department  
of Agriculture



Forest Service

Southwestern  
Region

November 2021

# Tonto National Forest

## East Verde River Headwaters Watershed Restoration Action Plan

Payson Ranger District, Tonto National Forest  
Gila County, Arizona



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### With Input from Partners Including:

Arizona Game and Fish Department

Arizona Trail Association

Arizona Wild

Friends of the Tonto National Forest

National Forest Foundation

Salt River Project

Trout Unlimited

U.S. Forest Service, Rocky Mountain Research Station

## What is the Watershed Condition Framework and Why a Watershed Restoration Action Plan?

The restoration of watershed and forest health is a core management objective of the national forests and grasslands managed by the Forest Service, an agency of the U.S. Department of Agriculture (USDA). To achieve this goal, the Forest Service is directed to restore degraded watersheds by strategically focusing investments on watershed improvement projects and conservation practices at the landscape and watershed scales. The Watershed Condition Framework (WCF) is a comprehensive approach for classifying watershed condition, proactively implementing integrated restoration in priority watersheds on national forests and grasslands and tracking and monitoring outcome-based program accomplishments for performance accountability (USDA, USFS, Watershed Condition Framework 2011).

The scope of the WCF is broad and it encompasses multiple resource areas. The Forest Service Watershed Program, as defined by OMB and the Forest Service Strategic Plan, encompasses all Forest Service activities that contribute to improved watershed condition (OMB 2006, USDA Forest Service 2004b), including soil and water improvements, vegetation management, reforestation, range management, wildlife and fisheries improvements, road decommissioning, and other activities. Watershed restoration refers to activities that improve the conditions of watersheds, restore degraded habitats, and provide long-term protection to soils and aquatic and riparian resources.

The WCF consists of a process involving six steps (Figure 1).

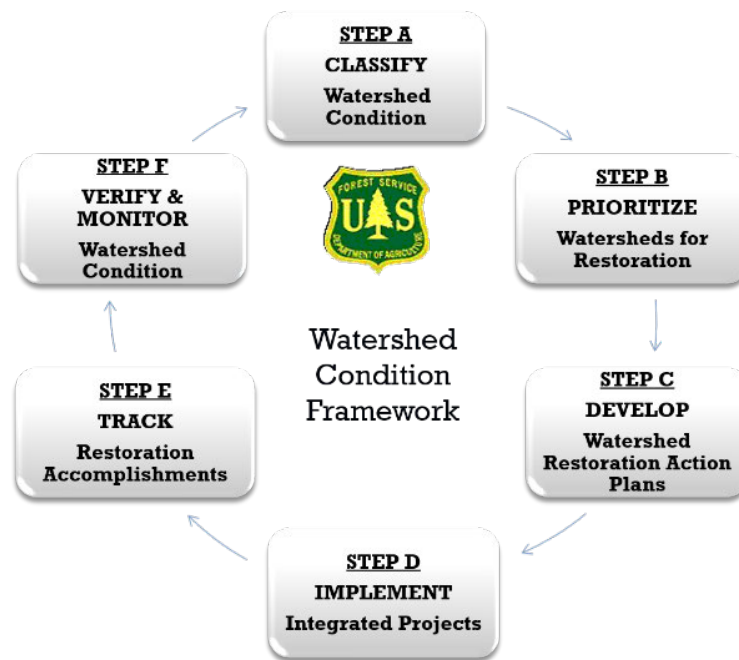


Figure 1: Watershed Condition Framework Process

Step A, watershed condition classification, is based on 12 core indicators that are rated good (1), fair (2), or poor (3) based on nationally established attributes that can be adjusted to fit local conditions.<sup>1</sup> The 12

<sup>1</sup> The WCF only assesses watershed condition on National Forest System lands – lands owned and managed by other entities within the watershed are not part of the assessment, but through partnerships may be part of a Watershed Restoration Action Plan where appropriate.

core indicators are: water quality, water quantity, aquatic habitat, aquatic biota, riparian vegetation, roads and trails, soils, fire regime, forest cover, rangeland vegetation, terrestrial invasive species, and forest health. The Tonto National Forest completed an initial assessment of its 181 sub-watersheds (6<sup>th</sup> code hydrologic unit code) watersheds in 2011. Step B is the determination of priority watersheds where restoration and enhancement work will occur. National direction limits each national forest or grassland to no more than five priority watersheds. In 2021 the Tonto National Forest has three priority watersheds: Camp Creek on the Cave Creek District, Green Valley Creek on the Payson District, and this priority watershed — East Verde Headwaters on the Payson District. The Green Valley Creek Watershed Restoration Action Plan (WRAP) was signed in April 2021 and the Camp Creek WRAP will be completed in Fiscal Year 2022.

WRAPs describe the existing condition of the priority watershed and identify specific essential projects designed to improve, or in some cases maintain, the overall condition of the watershed. It can be helpful to think of the WRAP like a treatment plan for an ailing patient – the WRAP provides health history and pre-existing conditions (e.g., highly erosive soils, overgrazing, proliferation of roads or user-created routes); examines the current ailments (e.g., head cuts, erosion, water quality impairment); prescribes treatments to put the patient on the path to recovery (e.g., road decommissioning, stream restoration, fencing of sensitive areas); and then provides a plan for monitoring the prescribed treatments to determine their effectiveness (e.g., monitoring dissolved oxygen in streams, riparian area extent and composition). A WRAP does not address all that ails a watershed because it is designed to be completed in five to six years and because there are some watershed condition impairments that would be economically impossible to remedy. The watershed condition assessment according to the twelve indicators is conducted by Forest Service specialists, however, the development, implementation, improvement, and monitoring of watershed condition is an effort that succeeds only with the participation of the Tonto National Forest's many federal, state, local, and non-profit partners.

## East Verde Headwaters Summary

**Watershed Name and Hydrologic Unit Code (HUC)<sup>2</sup>:** East Verde River Headwaters.  
HUC #150602030202

**General Location:** Northern portion of the Tonto National Forest in Gila County. Northern portion of the Payson Ranger District. See Figure 2.

**Total Watershed Area/National Forest System Area Within the Watershed::** 18,809 acres and 97%

**Watershed Characterization:** The East Verde River Headwaters (EV Headwaters) Watershed is in the transitional zone that runs northwest-by-southeast between the Colorado Plateau and Basin & Range physiographic provinces in central Arizona. The watershed is bound from the north by the Mogollon Rim, an escarpment along the southwestern edge of the Colorado Plateau. It is bound on the west by the ridge west of North Sycamore Creek and neighbored on the east by the ridge east of Dry Dude Creek. It is bound on the southwest by Little Diamond Rim and the southeast by Brody Hills.

Primary land use activities in the watershed include recreation, Off Highway Vehicle (OHV) use, wildlife habitat, fuelwood harvesting, and grazing. There are two developed day use areas within the watershed, Second Crossing and Third Crossing, and many areas for dispersed camping. Roughly nine miles of the Highline Trail cut across the top of the watershed. About half of this mileage is also designated as part of the of the Arizona Trail. The watershed contains several private communities and properties: Washington Park, Whispering Pines, Verde Glen, and the Shadow Rim Ranch Girl Scout Camp.

Endangered, threatened, proposed or candidate species and select species critical habitats within in the EV Headwaters Watershed include narrow-headed garter snakes (*Thamnophis rufipunctatus*), Chiricahua leopard frogs (*Lithobates chiricahuensis*), Mexican spotted owls (*Strix occidentalis lucida*), and Gila trout (*Oncorhynchus gilae*). The East Verde River flows into a designated Wild and Scenic portion of the Verde River, which is a major source of surface water for the Phoenix metro area as well as a host to other different endangered and threatened species. Dude Creek, a tributary to the East Verde, falls completely within the watershed and is eligible for Wild and Scenic River designation per the Tonto NF Revised Forest Plan.

Primary concerns in the watershed include water quality, in-stream and riparian habitat, and stream channel form and function. Uncharacteristically severe wildfires in the watershed in the past have caused significant damage to channel form and function in Dude Creek and Chase Creek, which in turn has caused increased sedimentation and flooding downstream. Road density and condition also contribute sediment to streams and degrade water quality. In-stream habitat and riparian improvements along the East Verde River will support native fish populations and the effort to improve sport fishing along the river. The current watershed condition class for the EV Headwaters is Class 2 (Functioning at Risk) and the target condition class is Class 1 (Functioning Properly). The watershed is Functioning at Risk because 8 of the 12 watershed condition indicators have attributes that are ranked as poor or fair. The key watershed conditions that are within EV Headwaters Watershed within Forest Service jurisdictional control and can be affected by changes in management are shown on Table 1.

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<sup>2</sup> East Verde Headwaters is a 12-digit HUC, which is technically designated by the USGS as a *subwatershed*. To use nomenclature like other WRAPs within the USFS and the language most commonly used by the public and partners, this document will refer to the area as a watershed not a subwatershed.

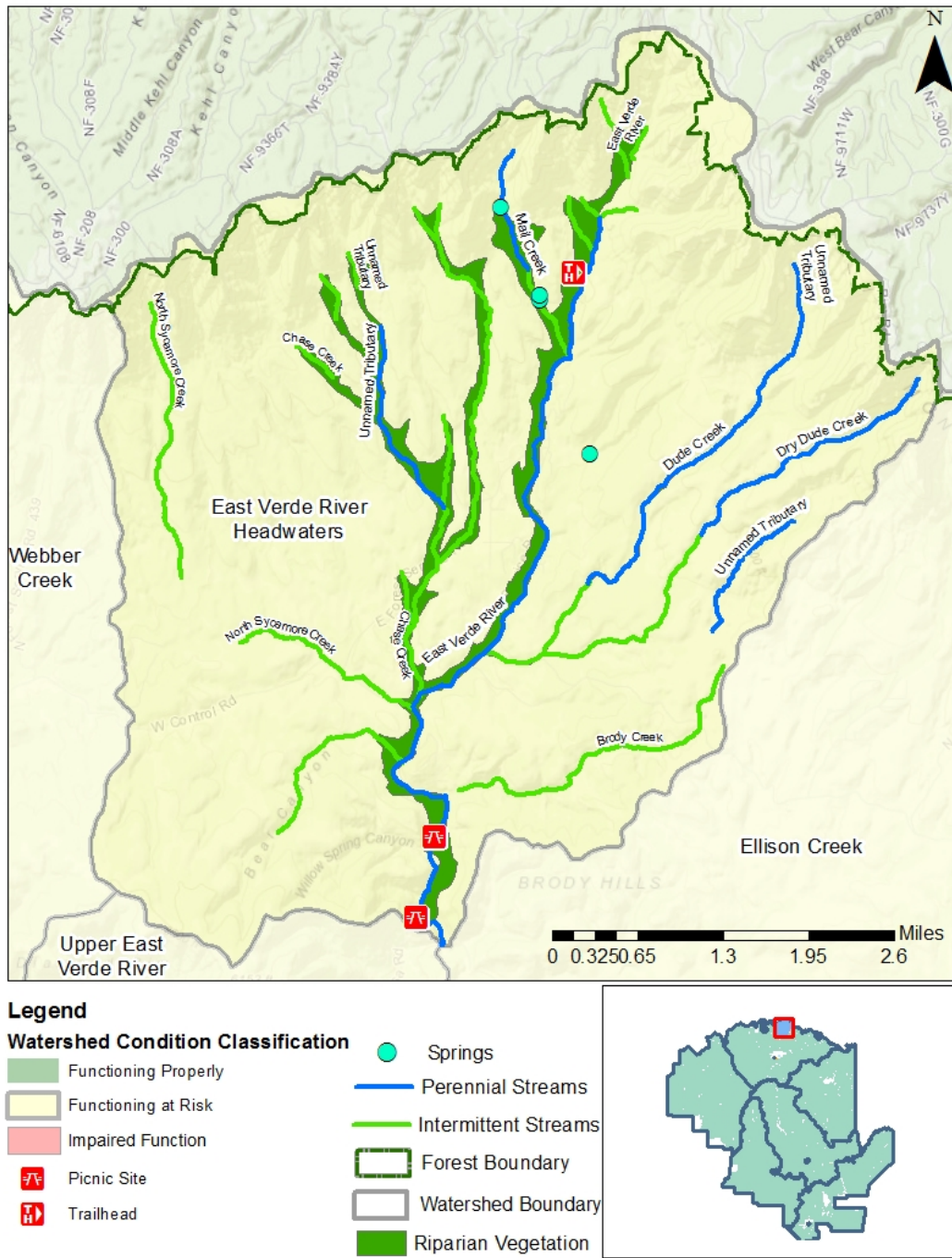


Figure 2: Overview of East Verde River Headwaters Watershed

Table 1: Summary of key watershed conditions ranked as fair or poor in the East Verde River Headwaters Watershed within Forest Service jurisdictional control and can be affected by changes in management

Attribute	Rating and Brief Reason(s) for Rating (Indicator Number)
<b>Water Quality (1)</b>	
Other Water Quality Problems	Rating <i>Fair</i> – Mail Creek and East Verde River are listed as “Supporting some Uses” in the Arizona Department of Environmental Quality 2020 draft assessment.
<b>Aquatic Habitat (3)</b>	
Habitat Fragmentation	Rating <i>Fair</i> - Between 25% and 95% aquatic habitats are connected. Mail Creek has a perched culvert, other streams such as Dude Creek and Dry Dude Creek are disconnected from the East Verde River, however, this disconnect benefits native species.
Large Woody Debris	Rating <i>Fair</i> – Large wood as an ecosystem component is present but is recruited into the system at less than natural rates.
Channel Shape & Function	Rating <i>Fair</i> – Post fire widening, channel incision, and flooding on Dude Creek and Chase Creek.
<b>Aquatic Biota (4)</b>	
Native Species	Rating <i>Fair</i> – Native species (Gila trout) are present on a limited number of perennial streams in the watershed and are largely self-sustaining.
Exotic and/or Invasive Species <sup>3</sup>	Rating <i>Fair</i> – Crayfish are present in all streams in the watershed.
<b>Riparian / Wetland Vegetation (5)</b>	
Vegetation Condition	Rating <i>Fair</i> – Watershed disturbance has impaired the condition of riparian vegetation, between 25-80% of riparian vegetation shows moderate to high geomorphic, hydrologic, and biologic integrity compared to relative natural potential.
<b>Roads &amp; Trails (6)</b>	
Open Road Density	Rating <i>Poor</i> – With 82.1 miles of roads and trails currently within the watershed, the current road density is 2.9 miles per square mile.
Road Maintenance	Rating <i>Poor</i> – Best Management Practices for the maintenance of design drainage features and overall annual maintenance of Class 2 roads occurs on less than 50% of the roads in the watershed.
Proximity to Water	Rating <i>Poor</i> – There are 26.2 miles of road or trail within 300 feet of perennial or intermittent streams.
<b>Soils (7)</b>	
Soil Productivity	Rating <i>Fair</i> – Roughly 10-15% of the watershed’s soil productivity is impaired from stressors such as uncharacteristically severe wildfire and lack of fire, cattle, and/or invasive species.
Soil Erosion	Rating <i>Fair</i> – Soil conditions show some departure from expected erosion rates which effect the ecosystem and hydrologic integrity of the watershed.

<sup>3</sup> Note that Rainbow trout, which are neither considered exotic or invasive species in the state of Arizona, are considered a non-native sportfish and are present in multiple streams throughout the watershed. The presence of these fish does not contribute to this score.

Attribute	Rating and Brief Reason(s) for Rating (Indicator Number)
<b>Terrestrial Invasive Species (11)</b>	
Extent & Rate of Spread	Rating <i>Fair</i> – The naturalization of invasive species that are present throughout the watershed has been facilitated by uncharacteristically severe wildfire events in the last few decades, as well as legacy historic grazing management practices.

There are no watershed conditions beyond Forest Service control to affect that will prevent the Forest Service from improving watershed condition on the EV Headwaters Watershed. Water quantity (Flow Characteristics) is, however, ranked as fair because of flow augmentation in the East Verde River from CC Cragin dam by the Salt River Project; multiple springs within the watershed that support domestic and livestock consumptive use; and eighty-seven wells held by private entities for use on their properties. While this flow augmentation changes the natural flow regime by increasing baseflows, it likely provides more benefit than harm to the East Verde River system by providing additional habitat for aquatic biota during low flow times of the year (summer and fall).

## Detailed Watershed Characteristics

### *Climate*

Climate statistics are available from a weather station in Payson, Arizona, located about ten miles south of the EVHW watershed.<sup>4</sup>

- Average annual maximum temperature: 72.5° F
- Average annual minimum temperature: 39.2° F
- Average annual total precipitation: 21.16 inches
- Average annual total snowfall: 24.1 inches
- Highest average monthly precipitation: 3.06 inches (August)
- Highest average monthly snowfall: 6.1 inches (January)
- Lowest average monthly precipitation: 0.36 inches (June)

### *Geology/Geomorphology*

The upper portion of the watershed consists of Permian sedimentary rocks, primarily limestone from the Kaibab and Toroweap Formations, with underlying Coconino Sandstone. Below this layer, Permian to Pennsylvanian Sedimentary Rocks are found, consisting of interbedded sandstone, shale, and limestone. The largest portion of the watershed consists of Mississippian, Devonian, and Cambrian sedimentary rocks, with sandstone, shale, limestone, and dolostone. A small area of Early Protozoic Granitic Rocks is found near the mouth (bottom) of the watershed, consisting of a wide variety of granitic rocks: granite, granodiorite, tonalite, quartz diorite, diorite, and gabbro.

### *Geophysical and Geomorphic Setting*

The EV Headwaters Watershed is in the transitional zone between the Colorado Plateau and Basin & Range physiographic provinces. The East Verde River is the primary drainage in the watershed, and it flows from the top of the watershed at southern end of the Colorado Plateau to the south roughly following East Verde River Road and Houston Mesa Road, exiting the EV Headwaters Watershed near Second Crossing Campground. Elevation ranges from approximately 7800' at the highest point on the

<sup>4</sup> <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?az6323> Payson, Arizona (026323) Period of Record: 11/06/1940 – 06/09/2016

Mogollon Rim to 5000' at valley bottom.

*Soils*

There are 17 Terrestrial Ecosystem Unit Inventory (TEUI) units within the watershed, below are descriptions for the larger units in the watershed.

The Ponderosa Pine and Mixed Conifer areas of this watershed are primarily composed of Udic Haplustalfs soils (Pink, Figure 3), which are characterized as fine loamy, mixed mesic deep gravelly to cobbly loam. Soil erosion hazard within this soil type ranges from slight to severe. The transition point between the lower valley of the watershed and the rim consists mostly of Udic Ustochrepts (Magenta, Figure 3) with loamy skeletal, mixed mesic gravelly loams with condition rating of unsuitable and severe erosion hazard.

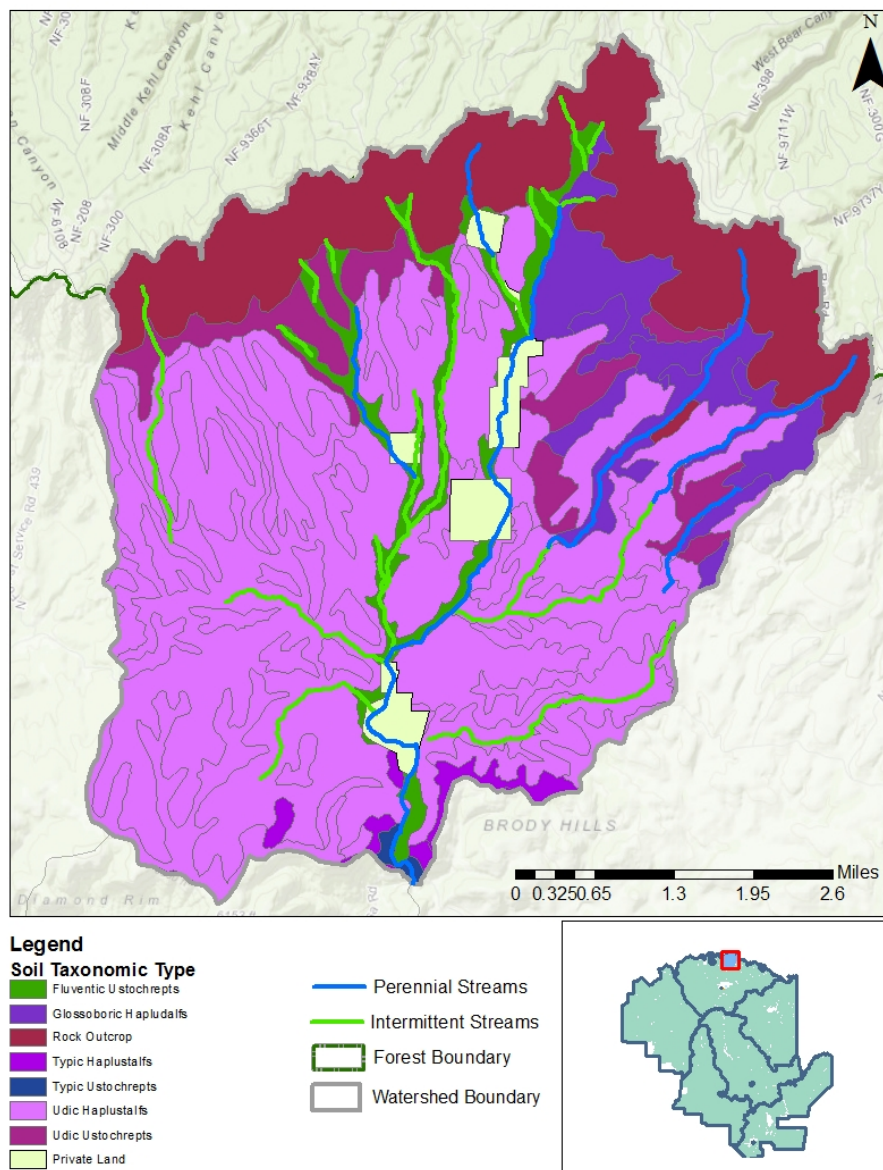


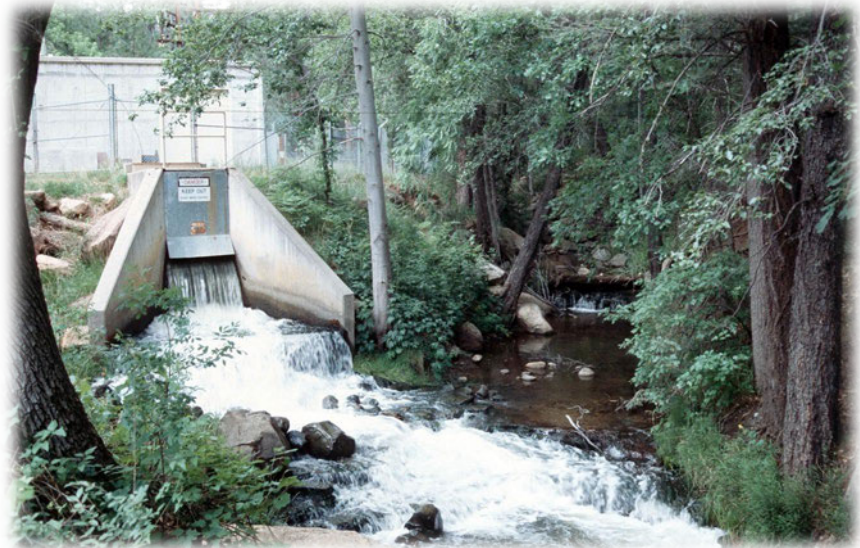
Figure 2: Soil Types

Found mostly along the southeastern portion of the watershed, Glossoboric Haplustalfs (Purple, Figure 3) with fine, mixed mesic deep gravelly to cobbly loam soils are rated with a slight erosion hazard in some areas and severe erosion hazard in others. Typic Udorthents (Blue, Figure 3) with sandy-skeletal mixed frigid and mesic gravelly sandy loams are dominant in the northeastern portion and have a severe soil erosion hazard. Riparian areas, or Fluventic Ustochrepts (Green, Figure 3), are unrated for erosion.

### *Hydrology*

The EV Headwaters Watershed is located within the East Verde River 5<sup>th</sup> level watershed. The East Verde River is a major tributary to the Verde River, one of the largest rivers in the state, and a significant contributor to the water supply for the Phoenix metro area.

Since September 1965 a trans-basin diversion from the C.C. Cragin Reservoir on East Clear Creek has contributed as much as 18,000 acre-feet (1969) and as little as 4 acre-feet (1992) of water per year to the East Verde



*Control structure where water from C.C. Cragin Dam enters East Verde River*

River near the mouth of Mail Creek. In 2019 this trans-basin diversion also began supplying the Town of Payson water via a pipeline that runs through the watershed. In the past decade, the median of flows contributed to the East Verde River from C.C. Cragin Reservoir have been 4,800 acre-feet per year. The number of months with imports, median, and maximum cubic feet per second (cfs) varies from year to year (Table 2 – summarized from USGS gage #09507580 East Verde River Diversion from East Clear Creek, Near Pine, AZ). Generally, the largest augmentation occurs in the summertime when low flows would have naturally occurred, and overall, the additional water has greatly increased the natural flow of the river (Carson 1986). To our knowledge, the long-term impacts of this augmentation have not been studied, however, a 1966 report by Hjalmarson and Davidson, indicate that the channel has "very small storage capacity along the entire length of the river, and there is usually sufficient water available to satisfy the demands of vegetation regardless of the amount of streamflow" (Hjalmarson and Davidson 1966) and Carson (1986) found that that the increased flow is confined to the already saturated low flow channel and losses of the added water due to seepage and evapotranspiration were minor. Both would indicate that the riparian area is not enhanced by the increased flows per se but could be impacted if those flows contribute to downcutting or channel instability. Finally, the entire length of the East Verde River, from headwaters to its confluence with the Verde River is protected by an instream flow water right (33-90310) with a priority date of November 26, 1985 for 2,889.6 acre-feet at the point where the river crosses the Highway 87 bridge (downstream from this watershed) and for 2,894.3 acre-feet at the USGS Gauge near Childs (near where the East Verde River meets the Verde River.) The instream flow right does not include any augmented flows from C.C. Cragin.

Table 2: Summary of flow statistics for 1966-2020 on the East Verde River Diversion from East Clear Creek, Near Pine, AZ gauge

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Monthly Mean cfs</b>	3.7	4	4.3	7	11	14	13	13	12	11	8.3	5.6
<b>Maximum cfs</b>	25.5	30.9	29.8	32.5	33.2	32.2	30.3	30	30.1	28.6	28.2	23
<b>% of yrs. with 0 cfs</b>	70%	70%	72%	49%	19%	14%	19%	19%	23%	16%	32%	51%



Unnamed tributary to Chase Creek – Site of Gila Trout reintroduction

Including the East Verde River, the watershed contains 16.4 miles of perennial streams and 22.3 miles of intermittent streams. Drainages run in a generally north-south direction, draining down from the Colorado Plateau. Perennial and intermittent reaches are found primarily in the upper northeastern half of the watershed in the steeper slopes coming down from the Mogollon Rim. Streams with perennial reaches in the watershed include East Verde River, Mail Creek, Chase Creek, Dude Creek, Dry Dude Creek, two unnamed tributaries to Chase Creek, and an unnamed tributary to Dry Dude Creek. Aside from the East Verde River, the southwestern half of the watershed consists of nearly all ephemeral reaches. Prominent springs exhibiting perennial or intermittent characteristics include Pieper Hatchery, Washington, Mail, and Heron Springs.

*Upland & Riparian Vegetation*

Vegetation is classified following the Ecological Response Units (ERU) framework<sup>5</sup>. Upland ERUs include Ponderosa Pine – Evergreen Oak, Mixed Conifer – Frequent Fire, Pinyon Juniper Woodland, and Pinyon Juniper Shrub. Riparian ERUs include Ponderosa Pine/Willow and Herbaceous wetland. Table 3 identifies the acreage and proportion of ERUs located within the projected watershed and Figure 4 displays the location of the ERUs within the watershed.

<sup>5</sup> Ecological response units are mapped ecosystem types based off biophysical themes that represent the range of conditions (e.g., dominant species, vegetation associations, soils, landscape features) that prevail under nature disturbance regimes.

Table 3. Ecological Response Units (ERU) located within the East Verde River Headwaters Watershed

ERU	Acres	Percentage of Watershed
Ponderosa Pine – Evergreen Oak	11,819	64.6%
Mixed Conifer – Frequent Fire	5,005	27.3%
Riparian (Ponderosa Pine/Willow and Herbaceous Wetland)	1,186	6.5%
PJ Woodland	243	1.3%
PJ Evergreen Shrub	51	0.3%

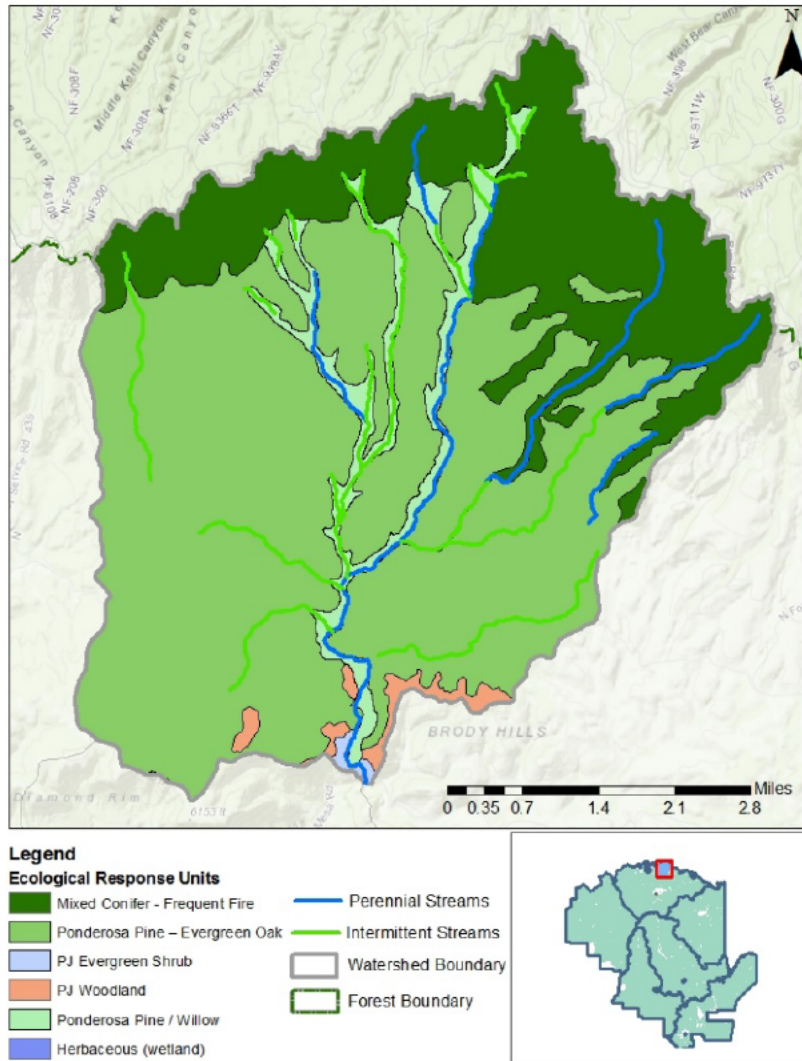


Figure 4: Ecological Response Units

### *Upland ERUs*

#### Ponderosa Pine-Evergreen Oak

The ponderosa pine-evergreen oak ecological response unit occurs in the mild climate gradients of central and southern Arizona and in southern New Mexico, particularly below the Mogollon Rim, where warm summer seasons and bimodal (winter-summer) precipitation regimes are characteristic. This type occurs at elevations ranging from 5,500-7,200 feet, on sites slightly cooler-moister than the Madrean pinyon-oak ecological response unit, and with a much greater plurality of ponderosa pine. This system is dominated by ponderosa pine (*Pinus ponderosa* var. *scopulorum*) and can be distinguished from the ponderosa pine forest ecological response unit by well-represented evergreen oaks (for example, Emory oak, (*Quercus emoryi*), Arizona white oak (*Quercus arizonica*), alligator juniper (*Juniperus deppeana*), and pinyon pine (for example, *Pinus edulis*). In some areas, ponderosa pine-evergreen oak communities can alternatively be dominated or co-dominated by Apache pine (*Pinus englemannii*) and Chihuahuan pine (*Pinus leiophylla*), both site potential indicators. In terms of disturbance, the ponderosa pine-evergreen oak averages greater fire severity than the ponderosa pine forests above the Mogollon Rim, and greater patchiness with less horizontal uniformity and more even-aged conditions. Understory shrubs include manzanita (*Arctostaphylos* spp.), turbinella oak (*Quercus turbinella*), skunkbush sumac (*Rhus trilobata*), and mountain mahogany (*Cercocarpus montanus*).

#### Mixed Conifer-Frequent Fire

In the southwestern United States, mixed conifer forests may be found at elevations between 6,000 and 10,000 feet, situated between ponderosa pine, pine-oak, or pinyon-juniper woodlands below and spruce-fir forests above. Typically, these types were dominated by ponderosa pine (*Pinus ponderosa* var. *scopulorum*) in an open forest structure with less than 30 percent tree cover and had occasional occurrence of aspen (*Populus tremuloides*), Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), and Southwestern white pine (*Pinus strobiformis*). This forest vegetation community typically occurs with an understory of grasses, forbs, and shrubs. The frequent fires that typify this ecological response unit are primarily low severity and are generally not limited by lack of fuel connectivity or high fuel moistures.

#### Pinyon-Juniper Woodland

Pinyon-juniper woodland is found mostly on lower slopes and in upland rolling hills at approximately 4,500 to 7,500 feet in elevation. Pinyon-juniper woodland characteristically has a moderate to dense tree canopy and a sparse understory of perennial grasses, annual and perennial forbs, and shrubs. Fire is infrequent and variable due to differences in ground cover, though some sites can carry surface fire. Typical species for pinyon-juniper woodland include two-needle pinyon (*Pinus edulis*), single leaf pinyon (*Pinus monophylla* var. *fallax*), Utah juniper (*Juniperus osteosperma*), oneseed juniper (*Juniperus monosperma*), and alligator juniper (*Juniperus deppeana*).

#### Pinyon-Juniper Evergreen Shrub

Pinyon-juniper evergreen shrub generally occurs at elevations of 2,400 to 7,800 feet. This ecological response unit is generally found on lower slopes bordering chaparral at the lower elevations and montane forests at higher elevations. Pinyon may be absent in some areas; however, juniper is always present. Oaks (Arizona white oak, grey oak, Emory oak) become more common among mild climate zones in central Arizona. The understory is dominated by low to moderate density shrubs, with herbaceous plants in the interspaces. This ecological response unit is found on well-drained soils, frequently with coarse-textured or gravelly (stony) soil characteristics. Dominant tree and shrub species include two needle pinyon (*Pinus edulis*), single leaf pinyon (*Pinus monophylla* var. *fallax*), Utah juniper

(*Juniperus osteosperma*), oneseed juniper (*J. monosperma*), alligator juniper (*J. deppeana*), Manzanita spp. (*Arctostaphylos spp.*), mountain mahogany (*Cercocarpus montanus*), Antelope bushes (*Purshia spp.*), silktassles (*Garrya spp.*), Stansbury cliffrose (*Purshia stansburiana*), turbinella oak (*Quercus turbinella*), and sumacs (*Rhus spp.*).



East Verde River at Washington Park

#### Riparian ERUs

##### Ponderosa Pine/Willow and Herbaceous Wetlands

There are 1,186 acres of riparian systems in the watershed. The most common is ponderosa Pine/Willow, which is typically found at elevations ranging from 4,500 to 9,700 feet and is typified by an overstory of ponderosa pine with an understory of shrub-form willow species. As a result of the pine overstory, this map unit is particularly hard to distinguish from pine-oak systems of similar physiognomy, and therefore is believed to be underrepresented in current mapping. Common riparian tree species include Arizona alder (*Alnus oblongifolia*), sycamore (*Plantanus wrighti*), cottonwood (*Populus fremontii*, *P. angustifolia*) box elder (*Acer negundo*), ash (*Fraxinus velutina*), big tooth maple (*Acer grandidentatum*), willows (*Salix spp.*), walnut (*Juglans major*), and mulberry (*Prunus spp.*). Understory species may include willows, brackenfern (*Pteridium aquilinum*), scarlet sumac (*Rhus glabra*), Virginia creeper (*Pathenocissus quinquefolia*), canyon

grape (*Vitis arizonica*), sedges (*Carex spp.*), and rushes (*Juncus spp.*). Species composition and abundance is highly depended on flood regime and site potential. There are 1,149 acres of Ponderosa Pine/Willow located along the East Verde River, Chase Creek, and several unnamed tributaries. The second largest riparian ERU area (31 acres) is along Dude Creek and is contains species such as Boxelder, Maple, Alder, Walnut. Finally, 6 acres along Dry Dude Creek are classified as herbaceous wetland ERU.

#### Threatened, Endangered, and Sensitive Wildlife and Plants

The watershed supports a variety of game and nongame species. It falls within Game Management Unit 22. Big game in the area include elk, black bear, whitetail deer, mountain lion, javelina, and turkey. Game birds and small game found in the project area include Gambel's quail, mourning dove, white-winged dove, cottontail rabbits, black tailed jackrabbits and Abert's and grey squirrel, as well as coyote and bobcat. Non-game species include a large variety of birds, mammals, reptiles, and amphibians. Northern goshawks and peregrine falcons are also known to inhabit the area. Sensitive fish species found in the East Verde River, but outside of this watershed include desert sucker, Sonora sucker, Roundtail chub. Sensitive plant species within this watershed include blumers dock (*Rumex orthoneurus*) and broadleaf lupine (*Lupinus latifolius subsp. Leucanthus*).

Endangered, threatened, proposed or candidate species and their critical habitat found within in the EV Headwaters Watershed include Narrow-headed garter snakes and their proposed critical habitat,

Chiricahua leopard frogs and their critical habitat, Mexican spotted owls and their critical habitat, and Gila trout.

**Chiricahua leopard frog** (*Lithobates chiricahuensis*) - The watershed falls in the Upper Verde Management Area (UVMA) in Recovery Unit 5 outlined in the Chiricahua leopard frog (CLF) Recovery Plan. Suitable habitat types within the watershed include stock tanks, springs, and streams. In addition to habitat, there is at least one known population of Chiricahua leopard frogs within the watershed.



*Chiricahua leopard frog*

**Narrow-headed garter snake** (*Thamnophis rufipunctatus*) - Critical habitat for the Northern Mexican garter snake and the Narrow-headed garter snake was proposed along the entire length of the East Verde River, including 1,160 acres in the EV Headwaters watershed in 2013. In April 2020, the U.S. Fish and Wildlife Service (USFWS) published a revised proposed critical habitat rule for the Northern Mexican garter snake and Narrow-headed garter snake. In their revised proposed rule, they recommended a significant reduction in acreage compared to the original proposed critical habitat rule published in 2013. This revised rule removed the proposed critical habitat reaches of the East Verde River within the watershed for both snakes.



*Mexican spotted owl*

**Mexican spotted owl** (*Strix occidentalis*) – There are 10,352 acres of designated critical habitat in the watershed. The watershed falls within the Mexican spotted owl Upper Gila Mountain Recovery Unit. There are two Protected Activity Centers (PACs) completely within the water shed, Shadow Rim and East Chase Creek, and one PAC, East Bray Creek, falls partially within the watershed. Outside of designated critical habitat and PACs, there is Forested and Riparian Recovery Habitat across the watershed, including ponderosa pine-Gambel oak, mixed conifer, and riparian forest communities that may be used by owls for various life history needs.

**Gila trout** (*Oncorhynchus gilae*) – Recovery populations currently are managed in Dude Creek and Chase Creek. Dude Creek was stocked with Gila trout from 2015-2017 with fish from multiple lineages and reproduction has been documented over time. While there are no plans for future stockings currently, population and genetic monitoring is ongoing. Additionally, the Arizona Game and Fish

Department has approved opening Dude Creek to catch-and-release angling beginning in May 2021. Chase creek was stocked with Gila trout from the Iron Creek lineage in 2017 and 2018 with reproduction observed in following years. Additional stocking planned when fish from the Iron Creek lineage become

available. In the fall of 2019, the Arizona Game and Fish Department began stocking the East Verde River with Gila trout for recreation put-and-take fishing in lieu of the rainbow trout stocked historically. Recreational fishing of Gila trout is authorized by a special rule in section 4(d) of the Endangered Species Act (16 USC 1531 et seq.; ESA) and as outlined under the down-listing rule for the species (USFWS 2006). These fish are considered surplus to the needs for recovery and are generally expected to be harvested in the same season as stocked. A creel and movement study are currently being conducted by the AGFD Sportfish Research program to evaluate stocking of Gila trout in the East Verde River.

**Blumer's dock (*Rumex orthoneurus*) –**

Blumer's dock is a species of conservation concern. A conservation assessment and plan were developed in 1993. Due to the rarity and threats to the species, plants were transplanted along several drainages below the Mogollon rim. The populations have been declining at the East Verde River and Washington Park area. Only one individual was located during surveys along the East Verde River below Washington Park in June of 2020 (Personal Communication, R. Madera). Past surveys have documented a steady decline of individuals at Dude Creek – likely the result of significant flooding and scouring following the Dude Fire in 1990 (Gobar 1991). It's unclear if the populations are still extant along Dude Creek.



*Blumer's dock*

**Boadleaf Lupine (*Lupinus latifolius subsp. leucanthus*) –** broadleaf lupine is a species of conservation concern. Plants occur along streams and moist soil of stream beds (lower elevations), in oak-cottonwood, mixed shrub, pine-oak and mixed conifer forests. Only one population has been documented in the watershed near the Washington Park area.

*Range Management*

Historically, there were two allotments within the watershed, Cross V and Payson, containing six pastures which cover a little more than 97% of the watershed. From 1968 to 2001, the Payson and Cross V allotments were paired together as one grazing unit and authorized 177 to 207 adult cattle yearlong (CYL).

In 2018, the Cross V and Payson allotments, as well as three other historic allotments, underwent a rangeland analysis as part of the Diamond Rim Range Environmental Assessment. Since the Diamond Rim Range Environmental Assessment, all five historic allotments have been merged into one larger allotment: the Diamond Rim Grazing Allotment (DRGA). When the DGRA Decision Notice was signed in February of 2018, permitted numbers became 619 CYL and 40 yearlings through September 30<sup>th</sup>, operated with rotation between the pastures. Below is a synthesis of conditions and rangeland management activities occurring within the DRGA within this watershed.

Table 4: Current and Historic Range Management Within the Watershed

Current Allotment Name	Historic Allotment Name	Permitted Numbers	Season of Use	Acres	% of Watershed
Diamond Rim	Cross V	619 CYL, 40 yearlings 1/1-9/30	Variable	9,292	51%
	Payson			8,451	46%
Percent of watershed grazed					97%

Pasture movements within a season are dictated by utilization levels, growing conditions, and the need to provide planned rest and to vary the season and intensity of pasture use to eliminate the development of use patterns. Grazing intensity is managed to allow for the physiological needs of plants. Anticipated days within each pasture manage intensity and frequency of defoliation. Distribution of grazing impacts are assessed on an ongoing basis to determine where specific improvements may be useful, based on the need to adaptively manage the development of infrastructure to achieve the desired result.

The eastern half of this watershed and consists of the East Verde, Dry Dude, Brody, and Beaver Valley pastures. All the above pastures are authorized for grazing yearlong but used typically in the summer (May through September). The western half of this watershed consists of two pastures which are the Girl Scout and Hell's Half Acre pastures. The Girl Scout pasture is also used in the summer months while the Hell's Half Acre pasture is utilized in the winter (October through April).

The East Verde and Girl Scout pastures comprise roughly 89% of the grazed area within the EVHW watershed. Both pastures are considered upper elevation areas. They are dominated by Weeping Lovegrass and are more suited to spring/summer grazing because this species is more palatable and nutritious during the active growing season. These pastures were rested in 2019 and 2020 with scheduled grazing in 2021.

#### *Timber*

There have been multiple thinning and prescribed burning (Rx) projects within this watershed dating back to 2008. From 2008 to 2019, a total of 15,883 acres were treated through fourteen different prescribed burns and fourteen different thinning projects. The thinning projects throughout the eleven years account for 4,561 acres. The remaining 11,322 acres are claimed through Rx burns, of which 1,901 acres were accounted for via wildfire management of the 2009 Rim fire.

#### *Fire History and Fire Regime*

There is significant variability between the fire regimes of the ERUs within this watershed, but about 92% of the watershed is mapped as Ponderosa Pine – Evergreen Oak (PPE) or Mixed Conifer with Frequent Fire (MCD), both of which are frequent fire systems that typically burned about every 10-12 years, averaging about 2,700 acres annually within the EVHW watershed (See Figure 4 for ERUs).

There have been six wildfires which have burned portions of the EV Headwaters Watershed since 1970. These fires burned a total of about 60% of the watershed, not including the multiple prescribed fires and mechanical treatments described in the previous section.

The Dude fire of 1990 was the largest fire which impacted this watershed burning a total of 24,174 acres, 3,653 acres which was within the watershed (Figure 5). The smallest fire which impacted the EV Headwaters Watershed was the Water Wheel fire of 2009, with a total of 773 acres where 195 acres were within the watershed. The 2,500-acre Rim fire also burned in 2009 where 1,901 acres were within the watershed boundary. In 2002 and 2006, the Packrat and February fire, respectively, burned a cumulative of 7,247 acres with a total of 3,103 acres within the ECRW watershed. The most recent fire, the 2017 Highline fire, burned a total of 4,724 acres, 308 acres of which were within the watershed boundary.

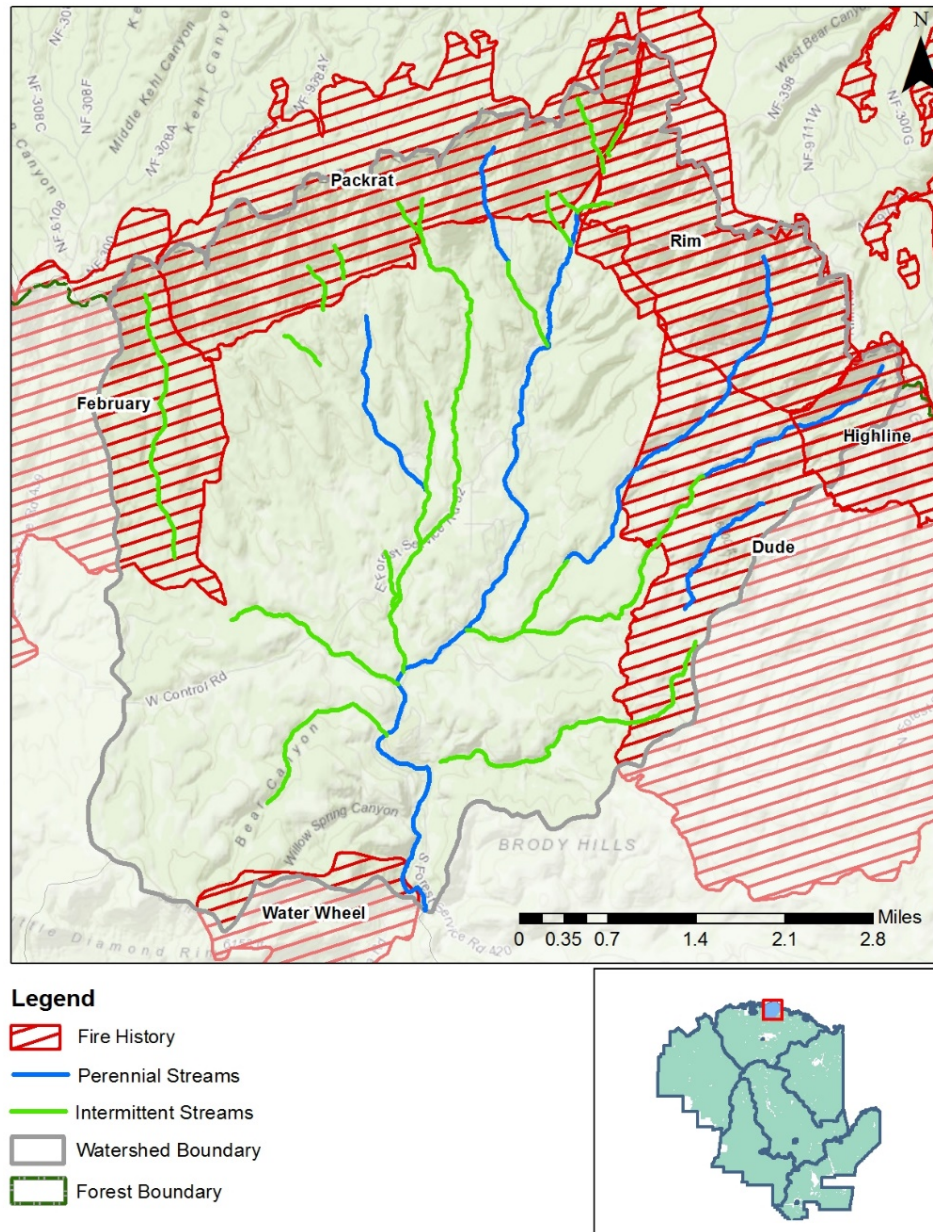


Figure 5: Fire History

### *Heritage*

The EV Headwaters Watershed falls within the Diamond Rim Grazing allotment complex, on which there are over 700 known archaeological sites, and a high probability of many more undocumented prehistoric and historic sites. These sites represent occupation by Hohokam, Salado, Central Arizona Tradition (Northern Salado), and Western Apache, as well as several historic sites reflecting use and occupation by Anglo ranchers, stockmen, miners and prospectors, the Civilian Conservation Corps, and the Forest Service. The density of prehistoric sites within the surveyed areas has ranged from moderate to high, however, much of the area has not been surveyed.



*Trailhead at Washington Park*

### *Recreation*

There are two developed day use areas located in the EV Headwaters watershed, Second Crossing and Third Crossing, which are also popular day use areas with river access for fishing and swimming. Dispersed camping, limited to areas 200 feet from a stream, can be found south of Verde Glen and in the areas around Dude Creek. These areas also see significant OHV use.

The watershed includes nine miles of the Highline Trail. From the western boundary of the watershed to Washington Park the Highline Trail is also the Arizona Trail, which is classified as a National Scenic Trail (NST).

At Washington Park the Arizona Trails turns north and takes hikers up to the Mogollon rim. There is approximately seven miles of the Arizona Trail within the watershed. Other recreation in the watershed includes hunting, fishing, dispersed camping, mountain biking, and shooting of firearms.

### *IRAs, ROS, and Wilderness*

There are no inventoried roadless areas, congressionally designated wilderness areas, or acres recommended for wilderness designation within the watershed.

There are 4 Recreation Opportunity Spectrum classes found within the watershed:

Semi-Primitive Motorized (SPM) – 6,359 acres

Roaded Natural (RN) – 3,575 acres

Semi-Primitive Non-motorized (SPNM) – 4,687 acres

Rural (R) – 3,683 acres

### *Climate Change Vulnerability*

Based on the Climate Change Vulnerability Assessment (CCVA) ratings for upland ecosystems (USDA Forest Service 2016, Triepke et al. 2019), the East Verde Headwaters Watershed has an overall vulnerability rating of high, based on a four-tier system of low, moderate, high, and very high. The CCVA rating is based on location, projected climate departure, and departure from the historic climate envelope for each ERU in the watershed. Even though riparian ERUs were not specifically analyzed

within the CCVA, one can infer the vulnerability of those systems based on the watershed scale results. (Figure 6)

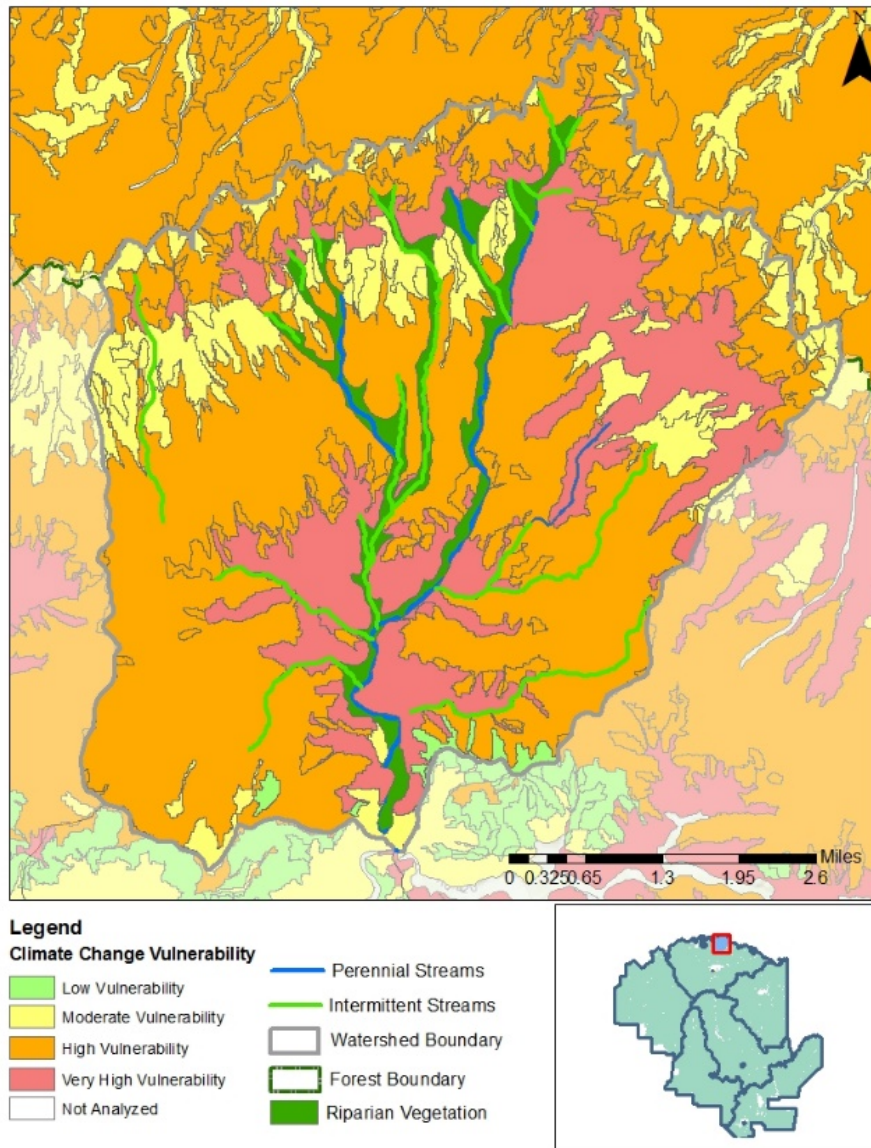


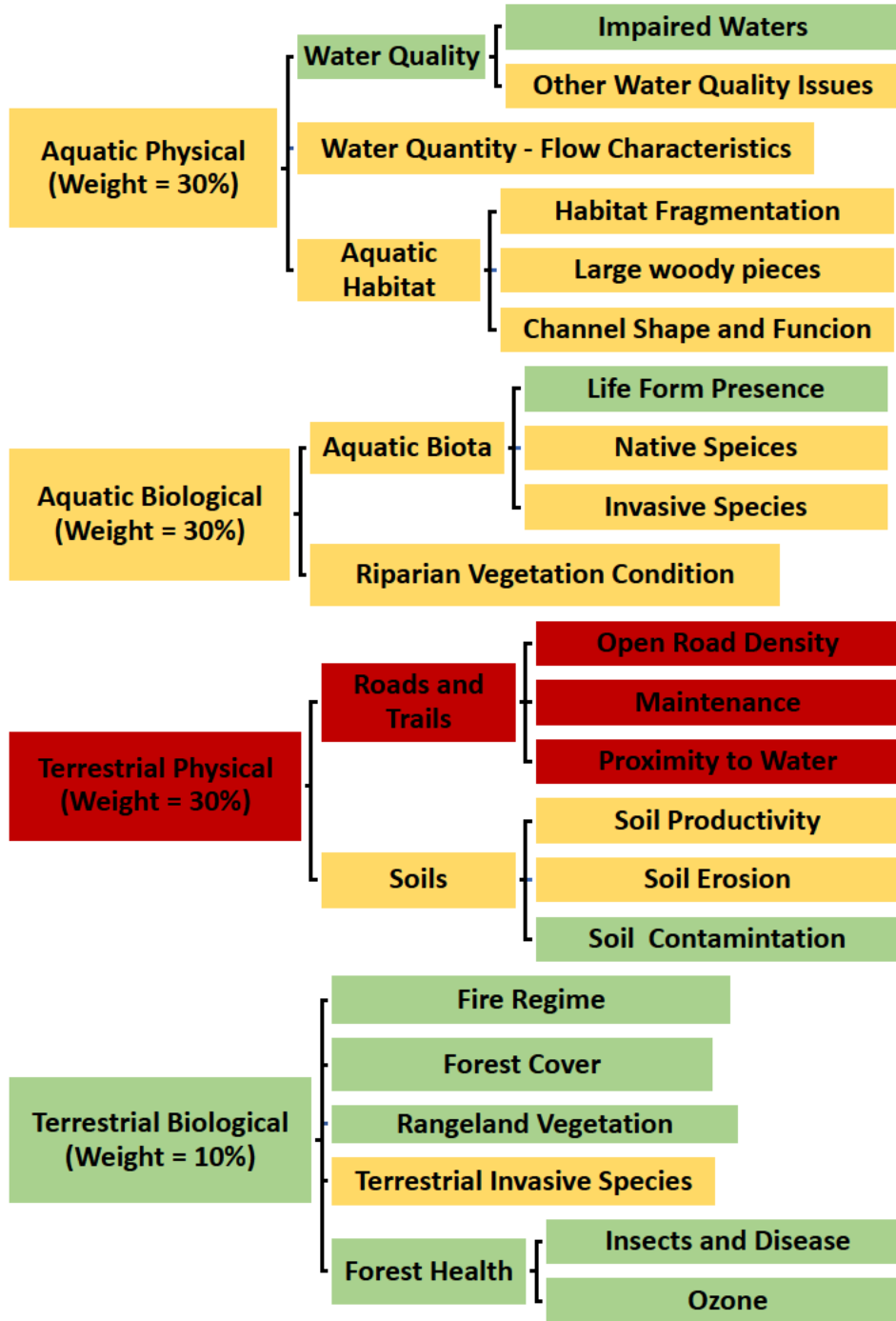
Figure 6: Climate Change Vulnerability Assessment

### Watershed Conditions

Figure 7 displays all 12 indicators and their attributes, color coded by their current condition score. Detail on how each score was determined is included in this section. The indicator and category scores are the simple average of all attributes. The overall watershed condition class is weighted as follows: aquatic physical, aquatic biological and terrestrial physical scores make up 30% each and terrestrial

biological constitutes the remaining 10% of the score. The current condition class of the watershed is Class 2 – Functioning at Risk based on a weighted score of 1.9.<sup>6</sup>

Figure 7: Summary of current condition for all watershed attributes  
green = good, yellow = fair, and red = poor



<sup>6</sup> Breaks for attribute averages and overall condition class are as follows: 1.0-1.6 is good or class 1, 1.7 to 2.2 is fair or class 2 and 2.3 to 3.0 is poor or class 3.

### *Water Quality*

Mail Creek and East Verde River were most recently assessed in 2020 by the Arizona Department of Environmental Quality and were both determined to be category 2, supporting some uses. Designated uses for East Verde in the watershed are aquatic and wildlife, fish consumption, full body contact (recreation), drinking water supply, and agricultural use. The 2020 report is not yet available, however, in 2016, the last time a report was issued, biocriteria was the parameter with an exceedance on this portion of the East Verde. Mail Creek designated uses include aquatic and wildlife, fish consumption, and full body contact (recreation). In 2016, Mail Creek was listed as a category 3, inconclusive, stream for dissolved oxygen exceedances. Because there are no streams in the watershed on the 303(d) list, impaired waters is ranked as good, however, due to Mail Creek and East Verde River being listed as category 2 in the 2020 assessment other water quality concerns is ranked as fair.

### *Water Quantity*

There are no diversions from streams or dams within this watershed. The East Verde River, however, has a higher than normal baseflow due to the water that is wheeled through the river from the CC Cragin Reservoir on the Coconino NF. There are also multiple springs within the watershed that support domestic and livestock consumptive use and therefore decrease natural baseflow in streams. Finally, the watershed contains eighty-seven wells held by private entities for use on their properties. Only one well is owned and operated by the Tonto National Forest. Because of the altered baseflows, both increase from CC Cragin water and decrease from spring and groundwater use, water quantity is rated as fair.

### *Aquatic Habitat*

Suitable habitat for native aquatic species diminished over time due to historic fire events and other stressors (e.g., recreation pressure, non-native invasive species, and grazing by wild ungulates). A head cut has developed at the headwaters of Dude Creek and is slowly growing, allowing for more sediment to deposit into the system and altering the habitat conditions for native fish found within the creek. Near the beginning of the perennial portion of Mail Creek there is a perched culvert that interrupts connectivity. On the East Verde River generally, there is a dearth of suitable holding/hiding habitat for aquatic species to reproduce, however, improvements over the last decade at Second and Third Stream Crossings on the river have improved conditions in those areas and the system is recovering there. Finally, the lack of near-bank vegetation cover caused by recreation use on the East Verde has also increased stream bank erosion and the amount of sediment entering the stream. Based on this assessment Aquatic habitat overall is rated as fair.

### *Aquatic Biota*

Chiricahua leopard frogs and Gila trout, species listed as threatened under the U.S. Endangered Species Act, are known to occur in the East Verde River Watershed. Recovery actions for both species are ongoing in this area and include removal of nonnative species, habitat assessments and restoration, releases to augment existing sites, and potential introductions into new sites.

From 2015-2017, in partnership with Arizona Game and Fish, US Fish and Wildlife Service, and Trout Unlimited, Dude Creek was stocked with native Gila trout (*Oncorhynchus gilae*). In 2017-2018 Gila trout were introduced in Chase Creek and an unnamed tributary to Chase Creek with the same partners as well as the Girl Scouts of America. Gila trout within these streams are classified as recovery populations. The East Verde River has a more complex mix of native and non-native aquatic species and the reach within this watershed, until its confluence with Ellison Creek, has recreational fishing for Gila trout and Rainbow Trout (*Oncorhynchus mykiss*).

Chiricahua leopard frogs were first released to the watershed in 2010 when tadpoles and metamorphosed frogs were introduced to Pieper Hatchery Spring. Since the initial release, Pieper Hatchery Spring has remained a stable productive site and often a source site of egg masses for head starting at the Phoenix Zoo or wild to wild egg mass translocation. In 2020, AGFD identified a second site, Dude Creek, as a suitable introduction site for the Chiricahua leopard frog. That same year, 22 metamorphosed frogs were released into the creek with 2021 survey results showing persistence. Based on elements of the system that are recovering but not recovered as well as ongoing issues with invasive aquatic species aquatic biota are ranked as fair overall.

#### *Riparian Vegetation*

Riparian condition was assessed for key reaches of the East Verde River and Dude Creek within the East Verde River Headwaters watershed in August 2019. The site potential for both East Verde River and Dude Creek are mix broadleaf riparian ecosystems characterized by a mix of deciduous riparian species (mapped as the Ponderosa Pine/Willow riparian ERU). Riparian condition was rated fair for the East Verde River. Many areas along the reach had eroding banks, bare ground, and compacted soils largely from recreational use and grazing. There was an overall low abundance of stream bank stabilizing riparian species, with only scattered occurrences of red willow (*Salix bonplondiana*) and patches of panicked bulrush (*Scirpus microcarpus*). Riparian condition was rated fair for Dude Creek. Downcutting, and large amounts of bedrock and boulders were present throughout the reach. Riparian tree species were present but not in great abundance and herbaceous riparian species were sparse to absent. Impaired conditions appear largely influenced from past fires. No recreation or grazing impacts were observed. Finally, selected spring habitats have also been recently improved within the EV Headwaters watershed, Pieper and Flowing Springs. These projects were developed to restore the vegetation within and around the springs as well as the flow regime. Based on recent field assessment and previous restoration activities at springs and at Second and Third Crossing (see description in Aquatic Habitat), between 25%-80% of the riparian areas within the watershed are properly functioning and riparian vegetation is rated as fair.



*Gila trout restocking with partners*

### *Roads and Trails*

Within the EV Headwaters Watershed there are 70.1 miles of road and 11.2 miles of trail making the current road/trail density 2.9 miles per square mile. Of these road and trail miles, 8 miles of road and 2 miles of trail are within 300 feet of perennial streams and 14 miles of road and 2.2 miles of trails are within 300 feet of intermittent streams. Overall, 37% of road miles are proximate to streams. Finally, less than 50% of the roads and trails within the watersheds have documented best management practices to protect water quality. Each of these indicators are ranked as poor making the overall ranking for roads and trails attribute poor.

### *Soils<sup>7</sup>*

Soil quality assessment and monitoring (soil condition) assess the ability of the soil to hold and release water (hydrologic function), the ability of the soil to resist erosion and degradation (soil stability), and the ability of the soil to accept, hold and release nutrients (nutrient cycling). Based on this assessment soils are rated as satisfactory (good), impaired (fair), or unsatisfactory (poor). A soil condition assessment was completed with 2007 data as a part of the Diamond Rim Grazing Allotment EA. Separate datasets are not available to distinguish soil erosion and soil productivity attributes, therefore, the overall soil condition information is used for both attributes. Most of the watershed, about 85% or 15,314 acres, consists of satisfactory soil conditions. Soils along riparian areas are subject to natural erosion, and 6% (1,172 acres) of these soils are considered impaired. Impaired soils are also found in the northeast portion of the watershed due to soil conditions post-fire (7%, 1,620 acres) Finally, <1% of the soils in the southern portion of the watershed are rated as unsatisfactory. Overall soil condition and productivity were rated as fair because >40% of soils in the watershed have been assessed as impaired or unsatisfactory. (Figure 8)

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<sup>7</sup> Thresholds for soil erosion and soil productivity attributes are - 0-5% = Good, 5-25% = Fair, and > 25 = Poor for the sum of Unsatisfactory and Impaired soils in the watershed.

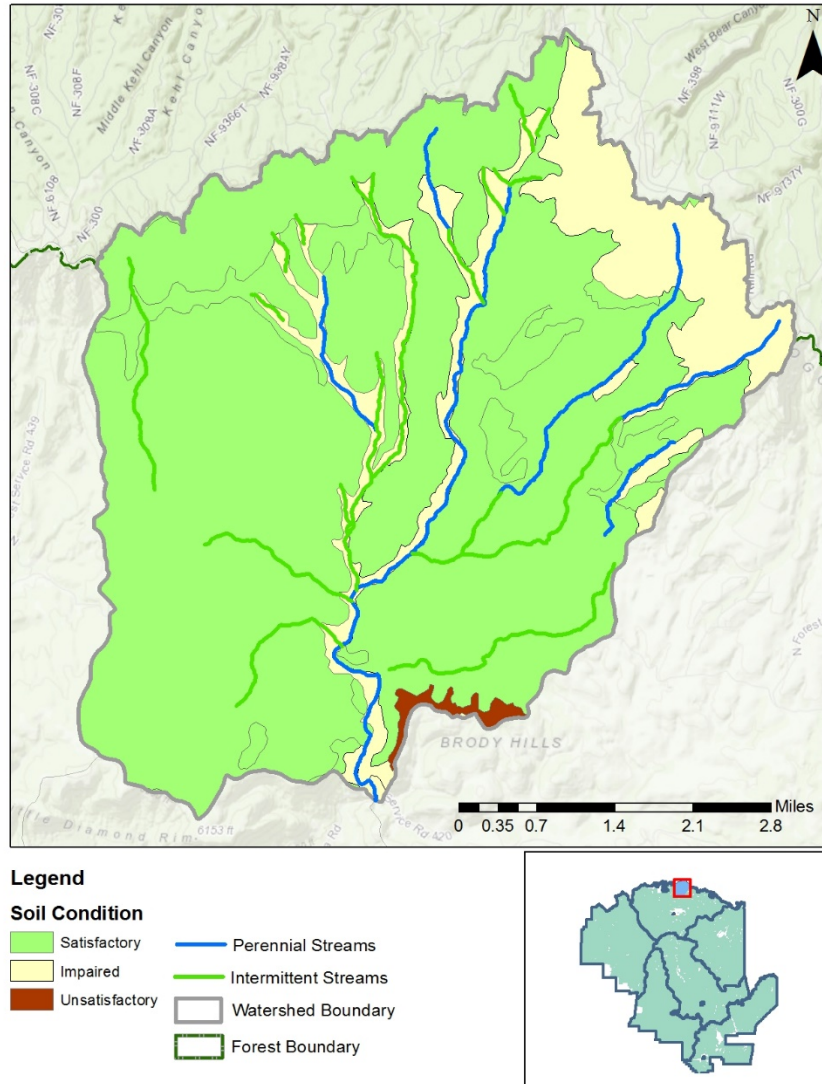


Figure 8: Soil Condition

*Fire Regime & Vegetation*

The Fire Hazard Index (FHI) is an index that incorporates modeled fire behavior with soil characteristics to produce a spatial layer that identifies where potential fire effects would be expected to be beneficial or adverse. On a scale of 0 – 9, with 0 being no effect and 9 being the highest level of adverse effects, Figure 9 shows the modeled results for the East Verde Headwaters HUC. This includes, but not limited to, the potential for first order fire effects such as the consumption of organic matter in the surface layers, decreased ground cover, or chemical and structural changes produced by heat. It also includes,

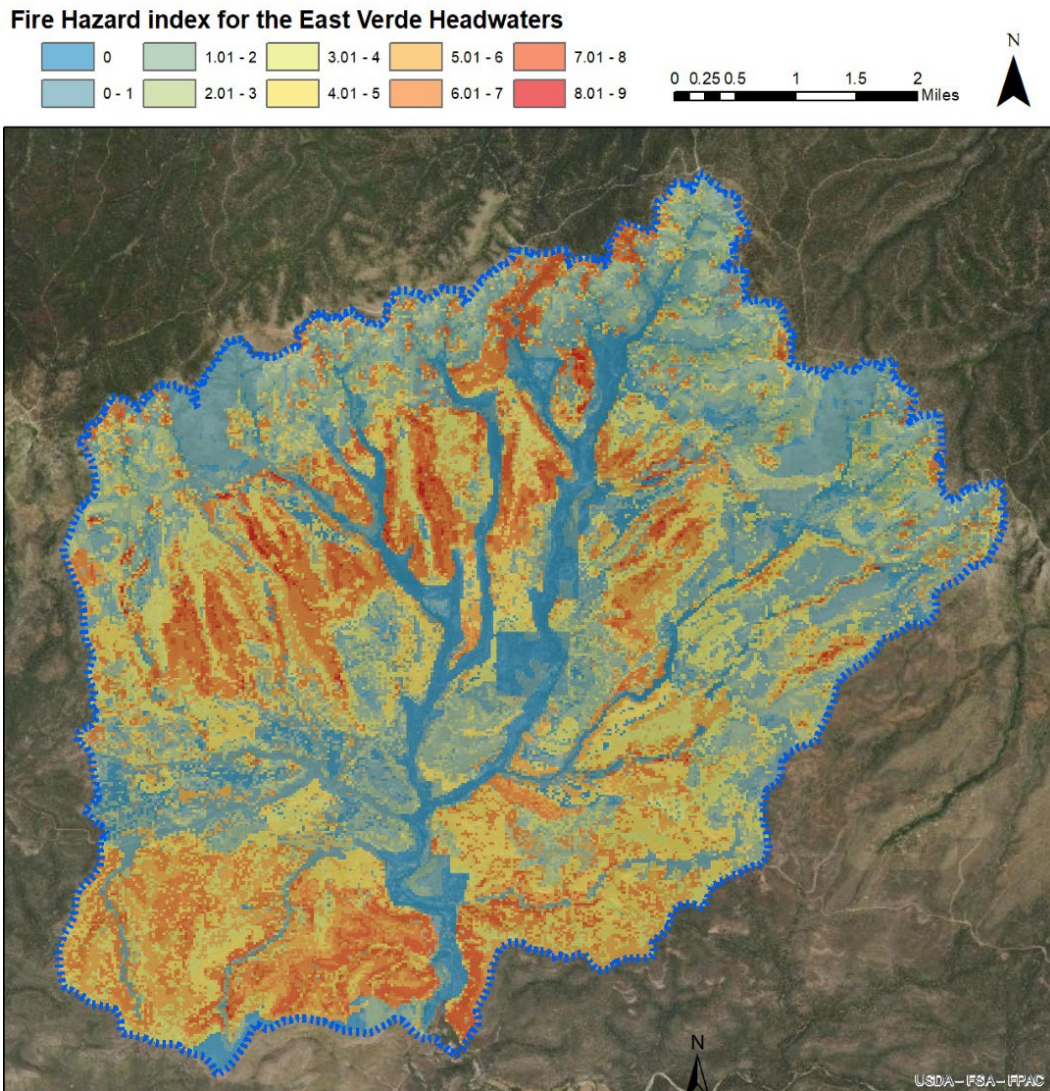


Figure 9: Fire Hazard Index

but is not limited to, the potential for second order fire effects, such as debris flows, post-fire mortality, or increased erosion.

About 10% of the watershed is in a condition with little concern for adverse fire effects, with another 19% being rated at a low concern for adverse fire effects. About 45% of the watershed is at a moderate risk, mostly in areas with low to moderate slope and erosion potential, sufficient shrub fuels to carry fire, but not heavy surface fuel loading. Those areas in lighter red and dark orange include about 20% of the watershed which is at high risk. In those areas, the combination of potential Soil Burn Severity and erosion could produce long-term damage to soils, including loss of topsoil. The area in the darkest red

(about 5% of the watershed) is rated as being at very high risk for potential adverse fire effects. In these areas, soil burn severity would likely be high on soils that are highly erodible and on steep slopes. Overall, about 75% of the East Verde Watershed is at low to moderate risk of adverse fire effects and therefore fire regime is rated as good.

#### *Forest Cover and Forest Health*

The EV Headwaters Watershed is rated as good for forest health. Over the past 4 years, the level of tree defoliation and mortality identified during aerial detection surveys (ADS) within the watershed was relatively low. In 2017, tree mortality due to bark beetles was limited to two individual ponderosa pine trees. Although 2018 witnessed a marked increase in tree defoliation and mortality across the forest due to drought, relatively little mortality was observed within the EV Headwaters Watershed. Mortality due to bark beetles was mainly limited to 10 occurrences less than ¼ acre in size scattered throughout the watershed. Only one larger area approximately 4 acres in size was observed. This area of “moderate” ponderosa pine mortality (11-29% of host tree affected) was observed east of the community of Whispering Pines and was attributed to bark beetles. In 2019 and 2020, no tree mortality or defoliation was observed during ADS flights. Endemic population levels of bark beetles may result in pockets of ponderosa and pinyon pine mortality. However, during favorable environmental conditions, bark beetle populations can build up rapidly and result in landscape-level tree mortality. While endemic levels of tree mortality are beneficial to wildlife by creating snags, tree mortality at the landscape-level may result in loss of forest cover, decreased wildlife habitat, and increased dead and down fuel loading.

#### *Rangeland Vegetation*

The current rangeland condition is generally stable with an overall upward trend overall and is therefore rated as good. Key areas, which are representative of the of rangeland location, use, or grazing value allow specialists to make management decisions to meet desired conditions for the allotments. The Girl Scout pasture hasn't been used for several years allowing for regrowth of rangeland vegetation without stressors other than wildlife which can be found in the watershed or pasture area.

#### *Terrestrial Invasive Species*

Invasive species which have been identified within this watershed include Bull thistle (*Cirsium vulgare*), Nodding plumeless thistle (*Cardus nutans*), Himalayan blackberry (*Rubus armeniacus*), Weeping lovegrass (*Eragrostis curvula*), and Common mullein (*Verbascum thapsus*). Weeping lovegrass accounts for most of the invasive species area within this watershed at about 3,600 acres. Due to the stressor and land disturbance from the Dude Fire in 1990, Weeping lovegrass has established itself in the north-western pocket of the watershed making it nearly impossible to eradicate. Common mullein, even though it is an invasive species, is one of low concern as it is mostly naturalized throughout the forest and doesn't displace native plants for extended periods of time. Overall terrestrial invasive species is ranked as fair.

#### *Restoration Goals and Objectives*

The overall goal of this Watershed Restoration Action Plan is to improve the existing watershed condition from Functioning at Risk with a rating of 1.9 to Functioning with a rating of 1.5 within a 6-year timeframe through the implementation of the proposed projects. The order projects are implemented is dynamic and not necessarily tied to a given Fiscal Year.

*Objectives*

Table 5 provides a summary of essential projects and Table 6 shows objectives for project implementation within six years to move the watershed to a functioning condition. While most of the projects within this WRAP are designed to improve one or multiple indicators, some projects also work to maintain indicators in good condition. These objectives align with the Forest Service FY2015-2020 Strategic Objectives 1-A (Foster resilient, adaptive ecosystems to mitigate climate change, all essential projects (EP)); 1-B (Mitigate wildfire risk, EP 1); and 2-D (Provide abundant clean water, all EPs). All essential projects within the WRAP also align with the following overall goals for watersheds within the 1985 Forest Plan: meeting minimum air and water quality standards, emphasizing improvement of soil productivity, air and water quality, enhancing riparian ecosystems and inventorying and interpreting soil, air, and water resources. It is also keeping with the management direction for the Management Area 4-F (Payson Ranger District General Management Area), which states: “Manage for a variety of renewable natural resources with primary emphasis on wildlife habitat improvement, livestock forage production, and dispersed recreation. Watersheds will be managed to improve them to a satisfactory or better condition. Improve and manage the included riparian areas (as defined by FSM 2526) to benefit riparian dependent resources.” Finally, this WRAP also supports desired conditions within the Draft Revised Tonto National Forest Plan relating to watershed and riparian conditions including WAT-DC 01, 02, 03 (specifically addressing properly functioning watersheds), 04, 07, and 09.

*Table 5: Summary of Essential Projects*

Essential Project #	Name	Time frame	Est. Cost	NEPA Complete?	Partners Identified?
1	Route Decommissioning	FY22-FY26	\$17,000	N	N
2	Road BMPs	FY24-FY27	TBD	N	N
3	Highline Trail Improvements	FY22-FY25	\$200,000	Y	Y
4	Restoration of Dispersed Camping Areas	FY23-FY25	TBD	N	N
5	Keger Timber Sale	FY24-FY25	\$784,000	Y	N
6	Bear Canyon Prescribed Fire	FY25	\$225,000	Y	N
7	East Verde Stream Habitat Restoration	Completed in FY21	\$51,000	Y	Y
8	Dude Creek Stream Habitat Restoration	FY22-FY23	\$29,500	N	Y
9	Chase Creek Stream Habitat Restoration	FY23-FY26	\$75,000	N	Y
10	Wildlife Water Catchment Restoration	FY22-FY23	TBD	Y	Y
11	Dude Fire Revegetation	FY22-FY26	\$825,000	N (part of Rim Country EIS)	Y
12	Noxious Weed Removal	FY22-FY27	\$1,000	Y	Y

Table 6: Restoration Objectives for the East Verde River Headwaters Watershed

<i>Indicator/Attributes</i>	<i>Current Score</i>	<i>Score After Implementation of Essential Projects</i>	<i>Essential Project #</i>
<b><i>Water Quality (1)</i></b>			
Impaired Waters (303d listed)	Good	Good	NA
Water Quality Problems (other)	Fair	Good	1, 2, 3, 4, 7, 8, 9, 11
<b><i>Water Quantity (2)</i></b>			
Flow Characteristics	Fair	Fair	NA
<b><i>Aquatic Habitat (3)</i></b>			
Habitat Fragmentation	Fair	Good	1, 7, 8, 9
Large Woody Debris	Fair	Good	7, 8, 9
Channel Shape and Function	Fair	Good	1, 2, 3, 4, 7, 8, 9
<b><i>Aquatic Biota (4)</i></b>			
Life Form Presence	Good	Good	7, 8, 9
Native Species	Fair	Good	7, 8, 9
Exotic and /or Invasive Species	Fair	Fair	NA
<b><i>Riparian Vegetation (5)</i></b>			
Vegetation Condition	Fair	Fair	7, 8, 9
<b><i>Roads &amp; Trails (6)</i></b>			
Open Road Density	Poor	Fair	1, 3
Road/Trail Maintenance	Poor	Good	2, 3
Proximity to Water	Poor	Fair	1, 3
<b><i>Soils (7)</i></b>			
Soil Productivity	Fair	Good	4, 5, 6, 11
Soil Erosion	Fair	Good	4, 5, 6, 7, 8, 9, 11
Soil Contamination	Good	Good	NA

<i>Indicator/Attributes</i>	<b>Current Score</b>	<b>Score After Implementation of Essential Projects</b>	<b>Essential Project #</b>
<i>Fire Regime (8)</i>			
Fire Condition Class	Good	Good	5, 6, 10
<i>Forest Cover (9)</i>			
Loss of Forest Cover	Good	Good	5, 6, 10
<i>Rangeland Vegetation (10)</i>			
Range Vegetation Condition	Good	Good	12
<i>Terrestrial Invasive Species (11)</i>			
Extent & Rate of Spread	Fair	Fair	12
<i>Forest Health (12)</i>			
Insects & Disease	Good	Good	5, 6, 11
Ozone	Good	Good	NA

*Alignment with State or local Goals*

There are no Total Maximum Daily Load (TMDL) reports within this watershed. The East Verde River and Mail Creek have been assessed in the Arizona Department of Environmental Quality’s 2020 draft report, but neither has a TMDL set.

*Opportunities for Engagement and Partner Involvement*

There are several partners that have expressed interest in assisting the Tonto NF with restoration in the East Verde Headwaters Watershed. These partners include, but are not limited to: Trout Unlimited, Arizona Game and Fish, Arizona Trail Association, Arizona Wild, Arizona Department of Forestry and Fire Management, Salt River Project, Friends of the Tonto and Northern Arizona Forest Fund. Continued photopoint monitoring at 16 designated sites within the watershed along the East Verde River, Dude Creek, and Dry Dude Creek will be completed in partnership with the Friends of the Tonto.

### *Anticipated Outcomes*

Completion of the WRAP will result in accomplishments in the following categories:

- Watershed class improved (WTRSH-CLS-IMP-NUM)
- Miles of road decommissioned (RD-DECOM-SYS)
- Acres of soil and water improved (S&W-RSRC-IMP)
- Miles of stream habitat restored/enhanced (HBT-ENH-STRM)
- Timber volume sold (TMBR-VOL-SOLD)
- Acres of timberland treated (TIMBER-SALES-TRT-AC)

### *Socioeconomic Considerations*

The Payson Ranger District, like all districts on the Tonto NF, has a high ecosystem services exposure for surface water supply because all watersheds on the district and forest supply surface water for Maricopa County. Even though the East Verde Headwaters Watershed is not designated as a municipal watershed it is a headwater watershed for the East Verde River and eventually the Verde River which in turn ultimately contributes to the water supply for Maricopa County. In terms of employment opportunities generated by this WRAP, within Gila County, these projects will employ contractors for some of the work. Other employment opportunities may occur using stewardship, service, or timber sale contracts. The sale of livestock from Forest Service allotments provides benefits to the permittee, his or her employees, and those businesses that supply materials to local ranching operations. Some seasonal employment is possible to build and maintain range developments and install erosion control measures. Finally, youth conservation crews from Gila County were used in 2020 to complete initial wet-dry mapping on Dude Creek as well as other streams within the Payson district. As funding allows, we will annually employ these crews to assist in monitoring in this and other watersheds on the Payson District.

### *Essential Projects*

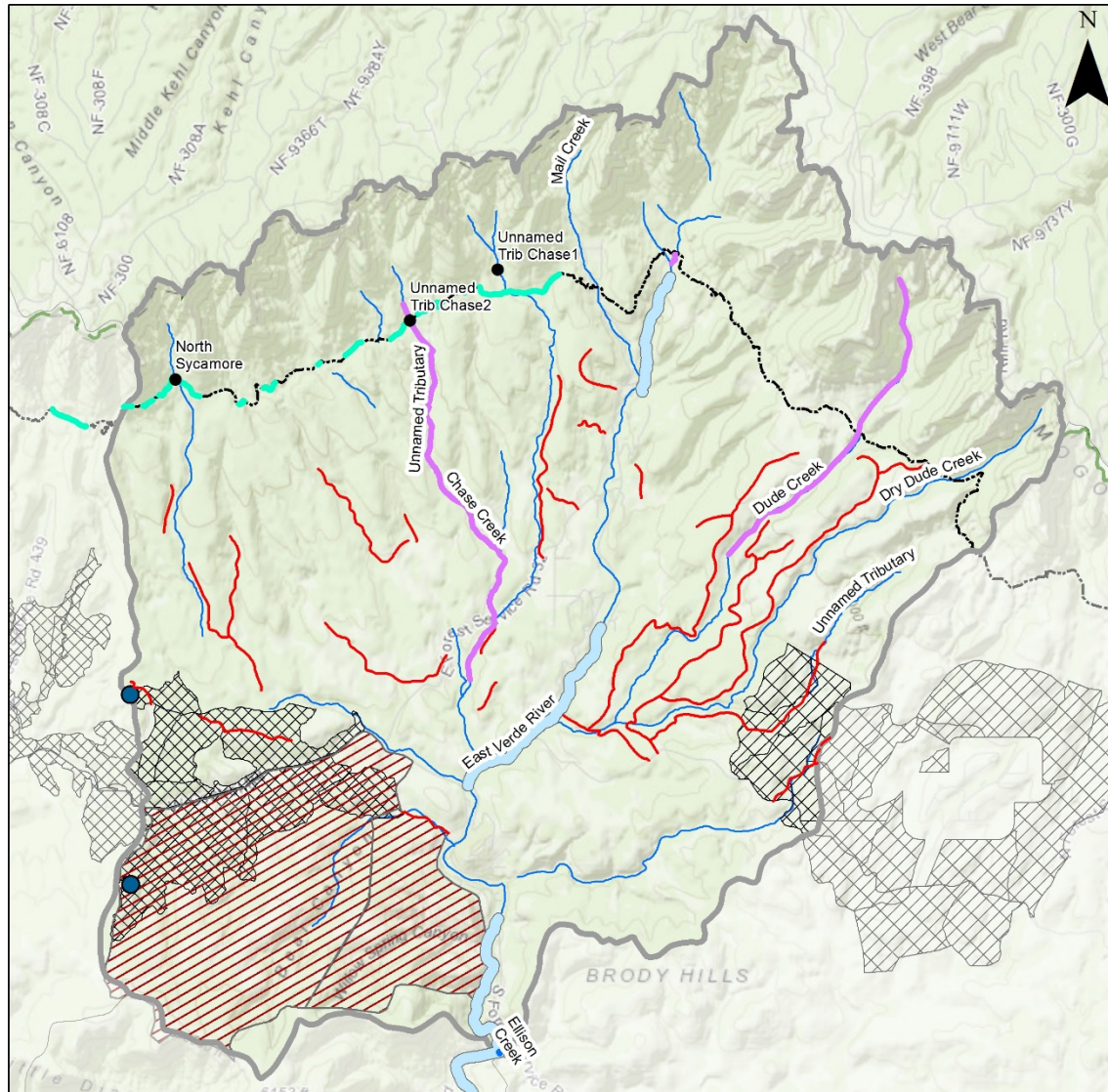
#### **Essential Project #1 –Route Decommissioning**

**Project description:** To reduce sediment delivery to streams within the EV Headwaters Watershed, work includes, but is not limited to, decreasing road density and proximity to water ratios by decommissioning approximately 16.5 miles of road, as identified in the 2021 Travel Management Record of Decision.

Decommissioning of roads per Forest Service Manual 7734.1 includes applying various treatments, including one or more of the following:

- reestablishing former drainage patterns, stabilizing slopes, and restoring vegetation
- blocking the entrance to a road or installing water bars
- removing culverts, reestablishing drainages, removing unstable fills, pulling back road shoulders, and scattering slash on the roadbed
- completely eliminating the roadbed by restoring natural contours and slopes

Field coordination throughout the NEPA process will determine actual treatment and final impacted mileage for each segment of road. See Figure 10 and Table 7.



**Legend**

- Perennial & Intermittent Streams
- - - - Highline Trail
- Watershed Boundary
- Forest Boundary
- Wildlife Catchment Restoration (EP#10)
- Improved Stream Xing (EP #3)
- Highline Trail Decom. (EP #3)
- Road Decom. (EP#1)
- Stream Habitat Improvement (EP#7, #8, #9)
- Dispersed Camping Restoration (EP #4)
- Bear Canyon RX (EP#6)
- Keger Timber Sale (EP#5)
- Dude Fire Restoration (EP#11)

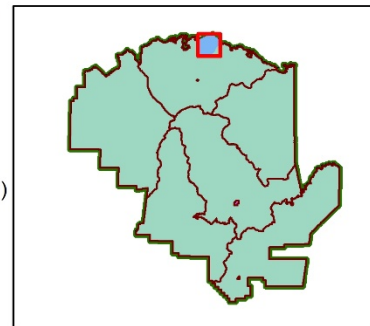


Figure 10: Overview of Essential Projects

Table 7: Routes to Decommission

FS Road Number	Total Miles to Decommission	Decommissioned Miles w/in 300 Ft of Streams
195	0.177	0
1175	0.68	0
1179	0.71	0
1181	1.10	0.49
1182	0.45	0
1184	1.00	0
1189	1.18	0.12
1191	0.86	0.21
1192	0.25	0
1193	0.38	0.12
1199	0.23	0
1206	1.31	1.00
1564	0.37	0.37
1568	2.68	0.90
1569	0.23	0.23
1573	0.25	0.25
1574	0.26	0
1575	0.23	0
1576	0.45	0
1637	0.72	0.46
1638	0.37	0.01
3042	0.35	0
3733	0.24	0
3735	0.32	0.18
3736	0.20	0
1191a	1.38	0.03
1203A	0.23	00.12
Unauthorized Route	0.37	0

**NEPA:** Routes identified in Travel Management on the Tonto National Forest Final Supplemental Environmental Impact Statement. Decommissioning actions on individual routes will be analyzed through a CE under 36 CFR 220.6(e)(20)

**Function Lead:** Engineering/Watershed

**Timeline:** FY22-FY25

**Partners:** None identified

**Estimated Cost:** ~\$1,000/mile of road @ 17miles = \$17,000

**Essential Project #2 – Road BMP Implementation**

**Project description:** To improve road maintenance indicator, open roads within the watershed will be reviewed for existing best management practices to protect water quality and new BMPs will be implemented as needed. This work began in the watershed in FY20 with the replacement of existing, non-functional culverts on Forest Service Road 32, which is near the Washington Park Trailhead and next to the East Verde River. Other road BMPs that may be implemented include new surfacing treatments, enhanced stream crossings, and soil cover on cut banks, fill slopes and drainage areas from roads.

**NEPA:** TBD

**Functional Lead:** Engineering/Watershed

**Timeline:** FY24-FY27

**Partners:** None identified

**Estimated Cost:** TBD

**Essential Project #3 – Highline Trail Improvements**

**Project description:** The Highline Trail spans nine miles across the top of the watershed and crosses seven perennial or intermittent streams, the East Verde River, Dude Creek, Dry Dude Creek, Mail Creek, East Sycamore Creeks and two unnamed tributaries to Chase Creek. The western portion of the Highline in the watershed is also the Arizona Trail. This project will reroute 2.89 miles of trail onto more sustainable grade, decommission 1.98 miles of trail, improve and maintain all existing trail miles, and improve crossings at East Sycamore and the two unnamed tributaries to Chase Creek. East Sycamore and the easternmost tributary to Chase Creek will be improved with bank stabilization where the trail crosses the stream and the westernmost tributary to Chase Creek will be improved with a trail bridge.

**NEPA:** Highline Trail CE

**Function Leads:** Recreation/Watershed

**Timeline:** FY22-FY25

**Partners:** Arizona Trail Association, Arizona Wild, National Forest Foundation, Friends of the Tonto

**Estimated Cost:** \$200,000

**Essential Project #4 – Restoration of Dispersed Camping Areas**

**Project description:** In FY18 the Payson Ranger District established camping restrictions along a 200-foot buffer of many of the areas adjacent to streams in the EV Headwaters Watershed. These areas have been delineated with snake fence; however, no additional restoration has occurred. This essential project will restore native vegetation to these denuded areas using a combination of seeding and erosion control structures such as one rock structures and Zuni bowls. Additional areas within 200-feet of the stream that remained open to dispersed camping will also be evaluated and may be closed, fenced, and restored if it is determined that resource damage is occurring. Over time, it is expected that bank stability and vegetative cover will increase because of the restrictions and restoration activities, which would increase potential hiding and overwintering habitat features for aquatic species as well as decrease erosion into the stream.

**NEPA:** TBD

**Function Lead:** Recreation

**Partners:** None identified

**Timeline:** FY23-FY25

**Essential Project #5 – Keger Timber Sale**

**Project description:** Approximately 930 acres of the Keger timber sale is within this watershed and covers about 930 acres. This project will be a task order on the 4 Forest Restoration Initiative (4FRI) phase 2 RFP contract. The task order will be issued in 2024 under the authority of the Rim Country EIS. The objectives of the Rim Country EIS are to improve and sustain watershed health, improve wildlife habitat, conserve biodiversity, protect old forest, reduce the risk of uncharacteristic wildland fire, and to restore forest health, structure, and function so that forests are more resilient to disturbance and climate change. Treatment will consist of uneven-aged management (single tree or group selection) and weed/release of the understory.

**NEPA:** Rim Country Environmental Impact Statement

**Function Lead:** Timber Management

**Timeline:** FY24 - FY26

**Partners:** None identified

**Estimated Cost:** \$748,400

**Essential Project #6 – Bear Canyon Prescribed Fire**

**Project description:** Plan and implement prescribed fire to better the overall health of wildlife habitat, reduce the risk of uncharacteristic wildland fire, restore forest health and structure so that the watershed is healthier and more resistant to climate change. A total of 2,246 acres of the planned 2,271 acres will be treated within the watershed.

**NEPA:** Verde WUI EA

**Function Lead:** Fire Management

**Timeline:** FY25

**Partners:** None identified

**Estimated Cost:** \$225,000

**Essential Project #7 – East Verde Stream Habitat Improvement**

**Project description:** In partnership with Arizona Game and Fish (AZG&F) and Trout Unlimited, the Tonto National Forest conducted restoration work focused on four reaches of the East Verde River: Washington Park, 2nd Crossing, 3rd Crossing, and Flowing Springs. Projects sought to create holding/hiding habitat and introducing heterogeneity to the East Verde system to benefit the sport fishery. Work was also done to realign and restructure the stream channel in areas previously impacted by low water crossings to both reduce the width to depth ratio of the stream and allow for better sediment transfer through the system. Within reaches heavily impacted by recreation pressure, riparian trees and grasses were reintroduced to improve streambank stability, reduce erosion and associated sediment input, and provide cover and shade to help maintain lower water temperatures. Other erosion treatments were added to reduce major contributors of sediment near recreation sites.

**NEPA:** East Verde River Aquatic Restoration Project

**Function Lead:** Wildlife

**Timeline:** Completed in FY21

**Partners:** Arizona Game and Fish, Trout Unlimited

**Estimated Cost:** \$51,000

**Essential Project #8 – Dude Creek Habitat Enhancement and Headcut Remediation**

**Project description:** Dude Creek is an important Gila trout (*Oncorhynchus gilae*) conservation stream. The creek has year-round surface water, but post-fire flooding has incised the stream over several years in turn having negative impacts to habitat quality throughout the stream. A headcut has developed on Dude Creek, endangering the upper reach of the stream which is less incised and still retains relatively good habitat quality. The purpose of this project is to arrest the advancing headcut that threatens good condition habitat and restore geomorphic function to this reach of channel. Additionally, concepts are provided to enhance habitat for Gila trout in an incised reach downstream of the headcut.

The project site is not directly accessible via forest system roads, thus most work will need to be performed by hand crews, potentially with support of a small, rubber-tracked excavator. Construction practices focus on the use of locally harvested materials of size appropriate for hand crews. The proposed work will include grade control features and induced meanders. The grade control features will consist of K-Dam structures, anchored log jams, and one rock dam.

**NEPA:** Categorical exclusion under CE 32.2(19)). The project will also likely need consultation with U.S. Fish and Wildlife Service on possible effects to Gila trout, Mexican spotted owl, and Chiricahua leopard frog.

**Function Lead:** Wildlife

**Timeline:** FY22 – FY23

**Partners:** Arizona Game and Fish, Trout Unlimited

**Estimated Cost:** \$29,500

**Essential Project #9 – Chase Creek Habitat Restoration Project**

**Project description:** Chase Creek, a Gila Trout recovery stream, has recently been affected by a large-scale flood event. Portions of the channel have scoured and reduced the amount of pool habitat available for adult Gila Trout. Since then, the watershed has stabilized to the point where habitat restoration activities will be beneficial to Gila Trout. Funding will likely be available in the Department's FY22 budget cycle for an assessment of the watershed and a subsequent design of habitat restoration practices. Implementation could likely occur in the next three to five years. Chase Creek is currently the only self-sustaining replicate population of the Iron Creek lineage of Gila Trout.

**NEPA:** Categorical exclusion under CE 32.2(19)). The project will also likely need consultation with U.S. Fish and Wildlife Service on possible effects to Gila trout, Mexican spotted owl, and Chiricahua leopard frog.

**Function Lead:** AZGFD Region VI Aquatics Program, Wildlife

**Timeline:** FY23 – FY26

**Partners:** AZGFD, Trout Unlimited, Tonto NF

**Estimated Cost:** \$75,000

**Essential Project #10 – Wildlife Water Catchment Restoration Project**

**Project description:** The Arizona Game and Fish Department (AGFD) in conjunction with the Forest Service is planning to replace two existing wildlife catchments in the watershed that have surpassed do not hold enough storage capacity to provide year-round water for wildlife needs. The catchments consist of approximately 1,000 gallon underground concrete water storage vault with an attached concrete in ground - walk in wildlife drinker. The water storage and drinker are fed by a large concrete collection apron connected to the vault at ground level. Each catchment arrangement lies with a

livestock enclosure fence approximately 150-foot by 150-foot (0.5 acre). Ongoing repairs have been made over the years to keep the catchments functional. These repairs have included cleaning out built-up sediment and patching cracked concrete on the aprons. In recent years the AGFD has worked to completely replace the outdated 1950s catchments with a modern system that allows for more water storage and less maintenance.

**NEPA:** CE – Completed 2020

**Functional Lead:** Wildlife

**Timeline:** FY22-FY23

**Partners:** Arizona Game and Fish

**Estimated Cost:** TBD

### **Essential Project #11 – Dude Fire Revegetation**

Approximately 970 acres of the Dude Fire Restoration Project is located within this watershed. This project will include mastication of brush, juniper, and evergreen oaks, prescribed broadcast burning, and strategic planting of ponderosa pine. Service contracts will be awarded between 2022 - 2025 under the authority of the Rim Country EIS. The objectives of the Rim Country EIS are to improve and sustain watershed health, improve wildlife habitat, conserve biodiversity, reduce the risk of uncharacteristic wildland fire, and to restore forest health, structure, and function so that forests are more resilient to disturbance and climate change. Treatment will primarily focus on weed/release treatments around ponderosa pine that were planted in the 1990s after the Dude Fire or ponderosa pine that regenerated naturally.

**NEPA:** Rim Country EIS

**Functional Lead:** Silviculture

**Timeline:** FY22- FY26

**Partners:** Arizona Department of Forestry and Fire Management, Salt River Project

**Estimated Cost:** \$825,000

### **Essential Project #12 – Noxious Weeds Removal**

There are observed accounts of newly established nodding, musk, and bull thistles throughout the area. It is important to remove and monitor these species while they are in small quantities in order to mitigate any rapid spread of them throughout the watershed and other nearby watersheds. Project work will be organized by Friends of the Tonto and their volunteers, and will occur in the Spring/ Summer portions of the WRAP lifetime.

**NEPA:** Tonto National Forest, Noxious weeds programmatic EA

**Functional Lead:** Invasive Species

**Timeline:** FY22-FY27

**Partners:** Friends of the Tonto

**Estimated Cost:** \$1,000

## **Monitoring**

Monitoring is an essential process, pre- and post-implementation, to understand the health of the resource as well as the effectiveness of essential projects in improving site conditions. The following monitoring activities will help inform management of the EV Headwaters watershed during and beyond

the life of this WRAP. Monitoring cooperating partners may include: Friends of the Tonto, Arizona Department of Environmental Quality, Arizona Game and Fish Department, and Trout Unlimited.

**Range condition monitoring and adaptive management:** Under the Diamond Rim Grazing Allotment EA, range condition monitoring will be conducted using, but not limited to, pace transects, pace quadrat frequency, dry weight rank, ground cover, Parker 3-step and repeat photography. Monitoring occurs at established permanent monitoring points.

**Riparian vegetation monitoring:** Riparian vegetation monitoring consists of 3 established photo points on the East Verde River, 12 photo points on Dude Creek, and 3 points on Dry Dude Creek that are maintained by Friends of the Tonto. These photopoints allow managers to qualitatively monitor riparian areas overtime to see how the system is responding to management objectives. Some photo points date back to 1992 with the most recent photos from 2020. If future locations or areas become of interest, specifically in and around project areas where photo points are not already established, new ones will be created.

**Rare plant monitoring:** There are two rare species identified within the watershed. Monitoring these species is crucial to ensure their longevity and their responses to management actions. In partnership with Friends of the Tonto, monitoring of the bloomer's dock and the broadleaf lupine will occur at known and potential site locations throughout the watershed.

**Hydrology/Geomorphology monitoring:** Three monumented cross-sections have been established on the two tributaries to Chase Creek and East Sycamore Creek to monitor change in channel morphology over time. In 2020 wet-dry mapping was conducted for Dude Creek and in 2021 mapping was completed for Mail Creek and Dude Creek. Wet dry mapping will be completed on Dude Creek, Mail Creek, the two unnamed tributaries to Chase Creek, and Dry Dude Creek annually as part of the monitoring during and beyond the life of this WRAP.

**Water Source Inventory Monitoring:** There are four springs within this watershed. Monitoring these water sources is crucial for management decisions in relation to recreation, wildlife, range, and more. In partnership with Friends of the Tonto, yearly site visits to the springs will occur where water quality, flow, riparian vegetation, developed features will be recorded.

**Water quality monitoring:** The Tonto watershed program will continue water quality monitoring sites established by ADEQ at Mail Creek Upstream for Washington Park and East Verde River Below Washington Park. An additional site will be established on Dude Creek downstream of the restoration area. At a minimum, water quality parameters that will be monitored include dissolved oxygen, temperature, pH, and electrical conductivity.

**Aquatic species monitoring:** The Arizona Game and Fish Department conducts annual surveys of Gila trout in both Chase Creek and Dude Creek. Surveys may include visual counts, electroshocking, redd counts, and opportunistic habitat assessments. Periodically the department may provide population estimates based on these efforts. In the East Verde River, there is ongoing research project to evaluate angler satisfaction and the fate of rainbow and Gila trout stocked as part of the put-and-take sport fishery. Initial results should be forthcoming in -2022. The Tonto National Forest and Ranid Frogs Project of the AGFD routinely monitor occupied Chiricahua leopard frog sites. Monitoring includes protocol visual encounter surveys pre-monsoon and post monsoon. Monitoring also focuses on identifying and removing threats and habitat assessments. Tonto National Forest also plays an active role in completing

annual Arizona toad surveys; data from these surveys will feed an occupancy model in development by the AGFD's Amphibians and Reptiles Program.

**Action Plan Date:** 11/05/2021

**Reviewing Official and Title:** Neil Bosworth, Forest Supervisor, Tonto National Forest

**Signature:**



**Forest Contact Information:**

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*This Watershed Restoration Action Plan is a programmatic document in which the Forest Service describes existing resource conditions and identifies possible management actions that could be taken to move the Agency towards a desired future condition. If the Forest Service determines that it wants to move forward with any of these possible actions, the proposed actions will be subject to National Environmental Policy Act requirements at the time the projects are proposed. NEPA may already be completed on some of these actions.*

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Carson, R. 1986. Streamflow augmentation effects on the flow characteristics of the East Verde River, AZ. U.S. Bureau of Reclamation, Lower Colorado River Region. 38pp.

Hjalmarson, H.W., and E.S. Davidson, 1966. Anticipated changes in the flow regimen caused by the addition of water to the East Verde River, Arizona. Arizona State Land Department Water Resources Report Number 28, prepared by The Geological Survey, US Department of Interior, Phoenix, AZ.

U.S. Fish and Wildlife Service. 2006. Reclassification of the Gila Trout (*Oncorhynchus gilae*) From Endangered to Threatened; Special Rule for Gila Trout in New Mexico and Arizona; Final Rule. Federal Register 71: 40657-40674. <https://www.govinfo.gov/content/pkg/FR-2006-07-18/pdf/06-6215.pdf#page=1>



United States  
Department of  
Agriculture  
Forest  
Service

Southwestern  
Region

February 19, 2021



# **Biological Assessment**

## **Payson Area Trail Improvement Project (Highline, Arizona, Red Rock and Strawberry Trails)**

**Payson Ranger District, Tonto National Forest, Gila County, Arizona**

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## INTRODUCTION

Many Forest Service System Trails on Tonto National Forest (Forest) are historic trails adopted into the system knowing current alignment was not in the most sustainable locations. The Forest has collaborated with Rim Country Trails Working Group to improve the environmental condition and user safety of trails surrounding the Town of Payson, Pine and Strawberry. The working group is comprised of members from these local communities, and partners from Gila County, Arizona Trail Association, Pine Strawberry Fuels Reduction Inc., and Volunteers for Outdoor Arizona. The group identified the Highline National Recreation Trail (Highline Trail), Arizona National Scenic Trail – White Rock Mesa Passage 25 (White Rock Mesa Trail), Strawberry Trail, and Red Rock Spring Trail as priorities for improvement. Improving segments of these trails will help prevent erosion, improve watershed health, increase user safety, and reduce maintenance.

This document presents a Biological Assessment (BA) for 1) trail re-route construction on identified segments, 2) decommissioning of old trail segments, 3) routine trail maintenance, and 4) pedestrian bridge installation on the Highline, White Rock Mesa, Strawberry, and Red Rock system trails on the Payson Ranger District. This BA provides information about proposed work and evaluates potential effects to Chiricahua leopard frog (*Lithobates [Rana] chiricahuensis*), Gila trout (*Oncorhynchus gilae*), Mexican spotted owl (*Strix occidentalis lucida*) and their habitat, in accordance with legal requirements found in section 7(a)(2) of the Endangered Species Act (ESA) (50 CFR 402; 16 U.S.C 153[c]).

### Definition of Action Area

For this analysis, the term “**action area**” will denote the area where proposed trail activities and bridge installation will occur and include those areas affected directly or indirectly by the federal action. The term “**project area**” includes only those areas within where trail work and bridge installation will occur.

### Species Considered and Evaluated

#### Threatened, Endangered, Proposed, and Candidate Species Considered

Species occurrence records from the Forest, Arizona Game and Fish Department (AGFD) databases and Environment Review Tool, and the U.S. Fish and Wildlife Service (FWS) Information, Planning, and Conservation (IPaC) decision support system were used to identify listed species which may occur or have suitable habitat within the action areas. Table 1 includes species and/or critical habitat that are considered within the action area and analyzed in detail within this document.

Table 1. Species and Critical Habitat Evaluated in Detail within the Action Area.

Common Name	Species	Status	Determination
Mexican spotted owl and designated critical habitat	<i>Strix occidentalis lucida</i>	ESA LT, DCH	MANLAA
Chiricahua leopard frog and its designated critical habitat	( <i>Lithobates [Rana] chiricahuensis</i> )	ESA LT, DCH	MANLAA
Gila trout	<i>Oncorhynchus gilae g.</i>	ESA LT	MANLAA

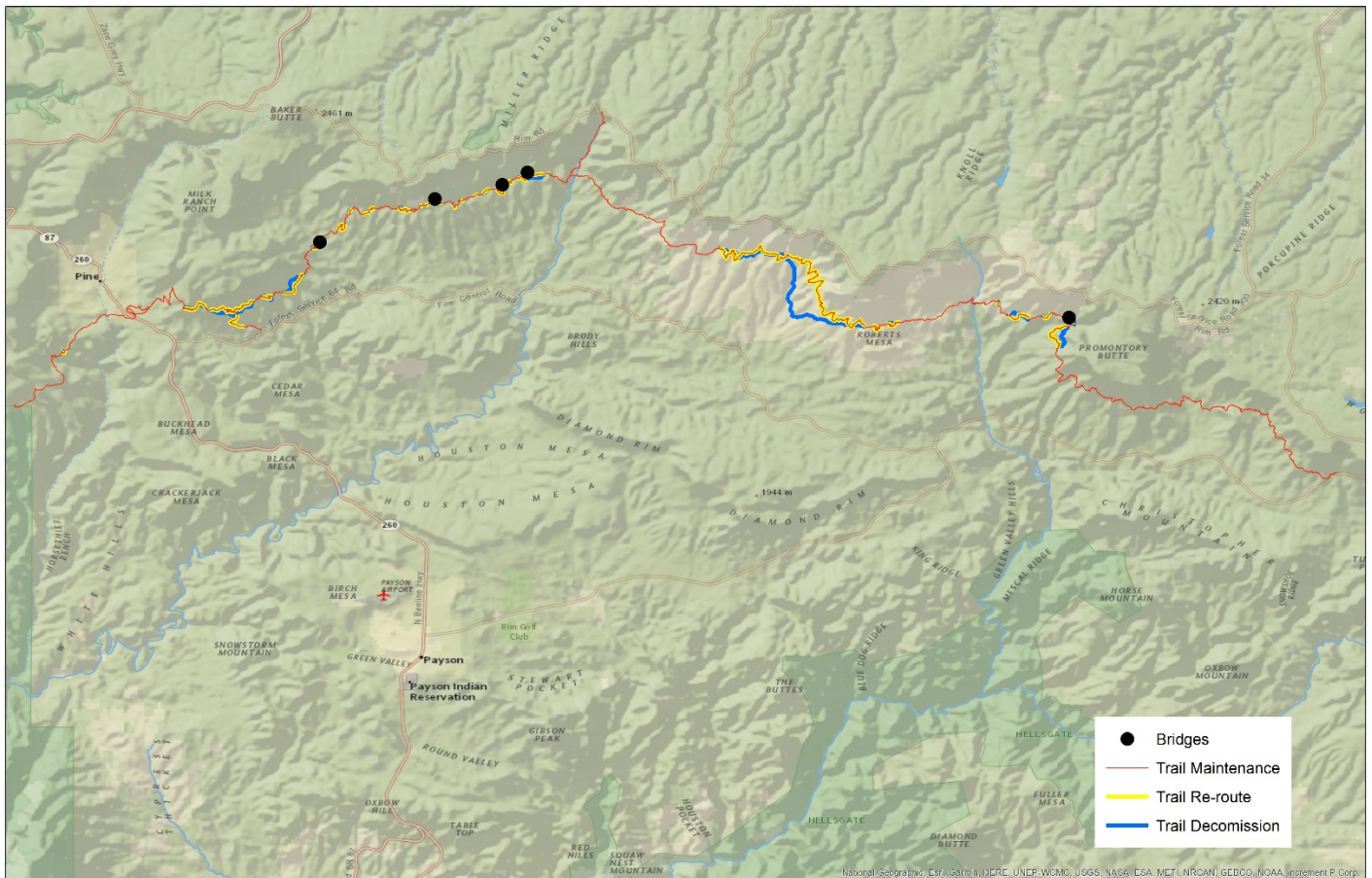
# PROJECT DESCRIPTION

The goal of this project is to prevent erosion, improve watershed health and water quality, increase user safety, and reduce maintenance of Highline, White Rock Mesa, Strawberry, and Red Rock system trails. This work will also provide a more enjoyable non-motorized trail experience for recreational users (mountain bikers, hikers, and equestrians) (Figure 1). The Forest does not have specific visitor use data on Highline, Strawberry, Red Rock Springs and White Rock Mesa trails, but, various recreation websites (*AllTrails.com* and *HikeArizona.com*) classify these trails as low to moderate use with most activity from March through October.

Table 2 Estimated Visitor and Seasonal Use of Highline, White Rock Mesa, Red Rock Spring, and Strawberry Trails.

Trail	Establishment	Estimated Visitor Use	Recommended Season of Use
<b>Highline</b>	1870	Moderate	March - October
<b>AZT White Rock Mesa Passage 25</b>	1990s	Moderate	March - October
<b>Red Rock Spring</b>	Unknown	Light	May - September
<b>Strawberry</b>	Unknown	Light	March - November

Figure 1 Overview of Proposed Action on Four Payson Area Trail Systems



### **Highline Trail Re-route**

Highline National Recreation Trail 31 is a 53.88 mile moderately trafficked point-to-point trail located near Pine, Arizona. The trail is primarily used for hiking, camping, mountain biking, and backpacking and is accessible year-round. No motorized vehicles are allowed.

### **Red Rock Spring Trail Re-route**

Red Rock Spring Trail 294 is a 0.9-mile lightly trafficked out and back trail located near Pine, Arizona that offers scenic views and is rated as moderate. The trail is primarily used for hiking and running and is best used from May until September. No motorized vehicles are allowed.

### **Strawberry Trail Re-route**

Pine Strawberry Trail is a 4.0 mile lightly trafficked point-to-point trail located near Pine, Arizona. The trail is primarily used for hiking, running, and mountain biking and is best used from March until November. No motorized vehicles are allowed.

### **Arizona National Scenic Trail – White Rock Mesa Re-route**

The Arizona National Scenic Trail is a complete non-motorized path, stretching 800 diverse miles across Arizona from Mexico to Utah and divided into 43 passages. Arizona Trail – Passage 25 White Rock Mesa is a 6.0-mile trail along East Verde River near Pine, Arizona. No motorized vehicles are allowed.

### **Environmental Baseline**

The project area traverses the Mogollon Rim, a rugged escarpment that forms the southern limit of the Colorado Plateau. The area consists of roads and trails with conditions that allow for various classes of vehicle, pedestrian, and equestrian uses. Recreational use, especially hunting and hiking, is a primary activity within the project area. Elevation ranges from 5,300-6,900 feet with vegetative communities ranging from chaparral, pinyon-juniper, ponderosa pine, and pockets of mixed conifer.

The action area enters six 6<sup>th</sup> level watersheds (Ellison Creek, Webber Creek, East Verde River Headwaters, Christopher Creek, Horton Creek-Tonto Creek, and Pine Creek). Perennial streams in the project footprint include Webber, Bray, East Verde River, Dude, Bonita, Tonto, Horton, and Christopher as well as several unnamed tributaries.

In 1990, the Dude Fire burned over 24,000 acres across the project area at high fire intensity, resulting in a stand replacing fire and triggering successional vegetative communities like chaparral scrub to replace areas previously occupied by ponderosa pine and mixed coniferous forest. Similar high intensity fire effects were seen in the February, Packrat, Water Wheel, and Webber fires. Combined, these fires equate to 39,638 acres of altered habitat along the Mogollon Rim. The most recent fire in the project area was the Highline Fire (2017) which burned inside the Dude Fire scar.

Livestock grazing and associated activities occur regularly within the project area almost entirely on the Diamond Rim allotment. Pine and Christopher Mountain/Ellinwood allotments border the west and east ends. These active allotments are permitted for year-long grazing under rest-rotation schedules. Pasture rotations are variable and planned annually based on current conditions

The Forest works cooperatively with AGFD and FWS to complete recovery actions for federally protected species and their habitats. Recovery activities for special status species in the project area are conducted as a partnership between FWS and AGFD through the Chiricahua Leopard Frog Steering Committee and Recovery Unit 5 (RU5) Local Recovery Group (LRG) and Arizona Native Fish Coordination Team (NFCT). Recovery actions are ongoing for Chiricahua leopard frog and include establishing new populations, augmenting existing sites, and habitat restoration. Recovery actions for Gila trout include replicating populations into secure streams that have barriers and free of non-native fish.

## PROPOSED ACTION

Specific to the Highline, White Rock Mesa, Strawberry, and Red Rock Spring system trails, we proposed 1) trail re-route construction on identified segments, 2) decommissioning of old trail segment, 3) routine trail maintenance, and 4) pedestrian bridge construction. Activities could occur annually and most often from September 1 to February 28 over a 10-year period.

*Table 3 Summary of Proposed Action on Across Four Payson Area Trails*

Trail	Miles of Existing Trail	Miles of Proposed Re-route	Miles of Proposed Decommission	Miles of Proposed Maintenance	Proposed Pedestrian Bridges
<b>Highline</b>	53.88	18.32	14.56	57.64	5
<b>White Rock Mesa</b>	6.0	0.15	0.06	6.09	0
<b>Red Rock Spring</b>	0.9	0.72	0.44	1.18	0
<b>Strawberry</b>	4.0	1.9	2.3	3.6	0
<b>Totals</b>	<b>63.9</b>	<b>20.46</b>	<b>17.36</b>	<b>68.51</b>	<b>5</b>

## Trail Re-route

The Forest proposes to relocate portions of trail contributing to soil erosion. Re-routes would reduce rapid changes in grade and be moved to more sustainable locations to provide a higher quality single track trail experience for all user groups.

Activities will align with existing Trail Class 3 pack and saddle design parameters outlined in FSH 2309.18 – Trails Management Handbook Chapter 20 – Trail Development.

*Table 4 Design Parameters for Proposed Trail Re-Routes*

Design Parameters	Specifications
Design Use	Foot, horse, and bike travel
Design Surface (single lane tread)	18” – 24”
Design Surface Type	Native, with some on-site borrow where needed for stabilization and occasional grading. Intermittently rough
Design Target Grade	3% – 12%
Design Clearing Height	Maximum 10 feet (120” tall)
Design Clearing Width	Maximum 8 feet (96” wide)

Identified re-route segments follow natural openings, contours, or areas that are not heavily treed. Trees < than 6” diameter at breast height (dbh), stumps, and brushy vegetation will be removed to properly relocate

and construct trail segments. Hand and mechanized tools will be used to clear vegetation (96" wide) and construct trail tread (24" wide). Erosion protection features like rolling grades and drain dips would be constructed as needed.

To minimize environmental impacts, ground disturbance will be restricted to the immediate tread construction area only and equipment will be limited to hand tools or small walk-behind or ride on mechanized equipment. The following equipment may be used to complete trail re-routes: Ditch Witch SK650 Mini Skid Steer, Sutter 300 and 500, or SWECO 450 and 480; mini excavators will be of similar width as mini dozers such as Bobcat 323, Caterpillar 301.6, and Kubota U15. This equipment is typically 30 inches wide. Once mechanical equipment builds tread, sides will be brushed in to reduce trail to proposed maximum width of 24 inches.

### **Trail Decommission**

Following the construction of re-routed trail sections, the abandoned trail prism will be decommissioned and rehabilitated to reduce erosion potential and lasting impacts to watersheds. The former trail sections will be blocked to foot traffic. Compacted tread will be broken up and/or scarified by hand where necessary to allow native grasses, plants, and seed to take hold and grow. The Forest Botanist will identify sections where a custom native seed mix will be used to help augment revegetation. To prevent further erosion on the trail bed the natural contour of the slope will be reestablished. If rills have formed within the existing trail bed, small one rock structures or Zuni bowls will be installed to arrest erosion. Not all segments of trail require the same level of rehabilitation, but all entry points of decommissioned trails will be blocked using downed material or nearby boulders to eliminate foot traffic. All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007).

### **Trail Maintenance**

The Forest proposes maintenance of Highline, White Rock Mesa, Strawberry, and Red Rock system trails. These trails are non-motorized, multiple-use trail systems. A combination of hand and mechanized tools may be used to accomplish maintenance work.

Standard trail maintenance practices proposed for use include:

- Hand tools for: Tread maintenance, resolving minor drainage issues, and removing vegetation via pruning, trimming, and brush removal. Obstacle removal including tree cutting and log removal.
- Power tools including chainsaws, jackhammers, weed trimmers, powered wheelbarrows, and small tractors or excavators may be used where conditions allow and almost exclusively outside of designated Wilderness areas. Minor rock work and timber installation for drainage stabilization.

Specific actions generally include brush trimming to a width of 8 feet and a height of 10 feet, check dam and water bar repair or installation, switchback repair, sign maintenance and installation, repair of retaining walls, maintenance of trail tread to provide 18-24 inches of width, and trail corridor hazard tree felling and buckling.

## **Bridge Construction**

The Forest has identified a minimum of five pedestrian-bridges where the Highline Trail crosses Horton Creek, Unnamed Tributary to Chase Creek 1, Unnamed Tributary to Chase Creek 2, North Sycamore Canyon and Webber Creek (Figure 2). These bridge locations, identified by the Forest Hydrologist, will prevent erosion of stream banks at stream crossings, improve the safety of the trail, and provide access during periods of higher flow. Over time, if conditions warrant the installation of a pedestrian bridge across other streams or wetted areas, the Forest will coordinate with FWS prior to installing any structures and follow conservation measures identified below (CM-5.1-6, CM-7, CM-9, and CM-10).

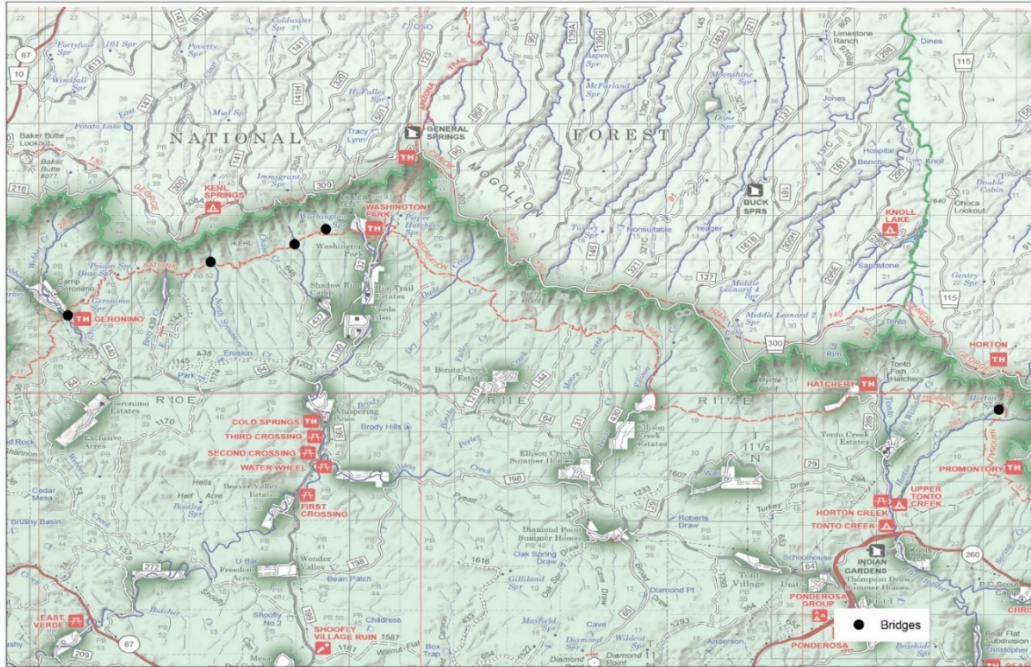
Pedestrian bridges will be permanent, artificial structures designed to provide safe passage for visitors while protecting riparian and aquatic resources. Stream survey data will inform bridge design. Hydrologists will analyze stream survey data in WinXSPRO, an interactive Windows software package used to predict or determine stream parameters like sediment transport and instream flow rates depending on storm severity. Bridge design elements will include an open bottom and free span structure that requires no mid-span piers allowing for free upstream and downstream passage for aquatic species. Bridges will be designed to minimize their size and complexity. Crossing width and span will accommodate transport of large woody material and the known range in flow variation modeled in WinXSPRO.

Tools used to construct the bridge will include, but are not limited to pick mattocks, pulaskis, generators, gas powered drills, cordless drills, chainsaws, hammers, transit levels, and tape measures.

## **Helicopter Use**

Helicopter cargo transports by sling load may be required to drop materials at bridge sites with difficult access. All flights will occur outside the MSO breeding season and if safe to do so, flight paths will avoid flying directly over PACs. Depending on payload, cargo transports could utilize a type II or type III helicopter. Helitack crews will load and hook cargo at staging areas adjacent to each bridge site. Likely staging areas include Bonita Pit and Horton Creek Campground. Depending on the bridge location, these staging areas limit flight distances to 2-5 miles of flying time at 345-500 feet above ground level (AGL) at roughly 100 miles per hour (mph). Once the helicopter reaches a bridge site, the pilot will drop to 100 to 150 feet AGL. The cargo will be lowered and released using a minimum 100ft long line. After cargo release, the helicopter will immediately leave the area to reduce time in the low and slow flight profile. Time in this profile is not expected to exceed 2 minutes per drop. We anticipate 1-3 flights at each bridge site.

*Figure 2 Identified Pedestrian-Bridge Locations along Highline Trail*



## Conservation Measures under the Proposed Action

Conservation measures outlined below are in place to minimize impacts to Mexican spotted owls (MSO), Chiricahua leopard frogs (CLFs), Gila trout, and their protected habitats.

### CM-1

Construction of trail re-route segments, decommissioning of old trail segments, maintenance of trails, and pedestrian bridge installation will occur September 1 to February 28 to avoid the MSO breeding season (March 1 – August 31). Timing restrictions may be waived on a case by case basis if protocol level surveys confirm non-nesting or an active nest is more than 0.25 mile from project work. Timing restrictions may also be waived if the district biologist, in coordination with USFWS determines actions within 0.25 mile will not disturb nesting birds.

### CM-2

Crews completing proposed trail work are prohibited from camping inside MSO protected activity center (PACs) and nest / roost recovery habitat.

### CM-3

Woody debris (large and small) removed for re-route construction or maintenance inside MSO PACs or owl habitat (critical and recovery habitat) must be left in as natural a condition as possible nearby to maintain cover for MSO prey species.

### CM-4

Vegetation removal on re-route trail segments, decommissioning of old trail segments, and maintenance in MSO PAC and recovery habitat will retain key habitat components and in MSO critical habitat will retain primary constituent elements related to forest structure and maintenance of prey species: 1) Trees of any

species > 6" dbh will be retained and 2) Snags or large downed logs will not be removed unless pose a threat to public safety. (see CM-2 for measures maintain smaller woody debris).

### **CM-5**

The following conservation measures will be in place during bridge installation:

1. Designated areas for equipment staging and stockpiling materials will be established to minimize the area of ground disturbance and impacts to special status species and their habitats.
2. Construction areas will be limited to the minimum area necessary for completing the project and confine disturbance to within this area.
3. Bridge design will span bankfull flows or greater, so structures do not impact geomorphology of the system or reduce impacts to woody recruitment into stream.
4. Bridges design will accommodate upstream aquatic species movement and be wide enough to maintain consistent flow within the stream.
5. Bridge sites across streams occupied by federally listed species will:
  - a. Be constructed during low water periods
  - b. Be free-span structures with no mid-span pier
  - c. Not include the use of treated wood
  - d. Include sills that are secured using rebar
6. Construction may require helicopter cargo transports by sling load to drop materials at bridge sites with difficult access.
  - a. All flights will occur outside the MSO breeding season and if safe to do so, flight paths will avoid flying directly over PACs.
  - b. Drop points will be clearly marked to reduce hovering time and exposure. Helicopter crew will receive coordinates for each drop point.
  - c. Whenever possible, pilots will fly above 345 AGL until a drop point is reached.

### **CM-6**

No maintenance, re-route, or decommission work will be conducted on trails within 0.1 mile of Chiricahua leopard frog commonly occupied sites or designated critical habitat during their active season (April through September) unless protocol surveys show the site is unoccupied.

### **CM-7**

Equipment used to implement proposed activities at CLF sites will be decontaminated to reduce the spread of chytrid fungus.

### CM-8

Appropriate erosion control measures such as rolling grades, grade reversals and drain dips will be included in construction, drainage management, and revegetation plans and approved by the Forest Service.

### CM-9

A biological monitor will be present when proposed activities at stream crossings occupied by Gila trout or Chiricahua leopard frogs have potential to cause disturbance.

### CM-10

Proposed activities across streams occupied by federally listed aquatic species will occur during low flow periods (June or October) provided this time frame is consistent with CM-1 and CM-6.

## STATUS OF SPECIES IN ANALYSIS AREA, EFFECTS AND DETERMINATIONS

### Mexican Spotted Owl (*Strix occidentalis lucida*)<sup>1</sup>

<b>ESA Status:</b>	Threatened, March 16, 1993
<b>Recovery Plan:</b>	2012, First Revision
<b>Critical Habitat:</b>	August 31, 2004
<b>Effects Finding (species)</b>	May Affect, not Likely to Adversely Affect
<b>Effects Finding (critical habitat)</b>	May Affect, not Likely to Adversely Affect

### Status within the Action Area

#### *Protected Activity Centers*

Twelve MSO PACs are affected by various components of the proposed action (Figure 3). The Highline Trail passes through or forms the boundary of 11 established MSO PACs for a total of 11.43 miles of trail in PACs within the project area. An additional 0.46 miles of Red Rock Springs trail roughly follows the eastern boundary of Cypress Hill PAC. The White Rock Mesa and Strawberry trails do not intersect MSO PACs. Three of the five bridge locations are in PACs, one of which is in a nest core.

Table 4 summarizes miles of proposed re-routes, decommissions, maintenance, and bridge installations in the 12 PACs affected by the proposed action. Table 4 also displays affected habitat in acres calculated by buffering miles of trail segments in PACs by a width of 20 feet. A buffer of 20 feet (10 feet of each side of trail) is a conservative zone of disturbance given vegetation trimming will only occur within 4 feet or less of each side of the trail tread. Table 5 summarizes miles of proposed work occurring specifically inside nest cores with the same disturbance zone of 20 feet to calculate acres of affected habitat.

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<sup>1</sup> For life history information on the Mexican spotted owl, please visit [https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MSO/2012MSO\\_Recovery\\_Plan\\_First\\_Revision\\_Final.pdf](https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MSO/2012MSO_Recovery_Plan_First_Revision_Final.pdf)

In summary, 7.85 acres of habitat will be impacted by re-routes and 7.49 acres affected by decommissions across seven PACs and three nest cores. Implementing re-routes and decommissions will result in 29.12 acres of habitat disturbance from trail maintenance across 12 PACs and 7 cores.

The proposed action will increase trail miles in five PACs by a distance less than or equal to 0.21 mile. Although proposed re-routes increase miles of trail in five PACs, re-routes reduce the amount of trail miles inside three of the five nest cores.

Trail miles in Horton Springs PAC will be reduced by 0.21 mile and Shadow Rim PAC by 0.24 mile. Bridge installation has been identified inside East Bray, East Chase, and Horton Springs PACs. See **APPENDIX A** for individual PAC maps displayed detailed proposed activities.

Figure 3 Overview of 12 PACs Affected by Proposed Activities

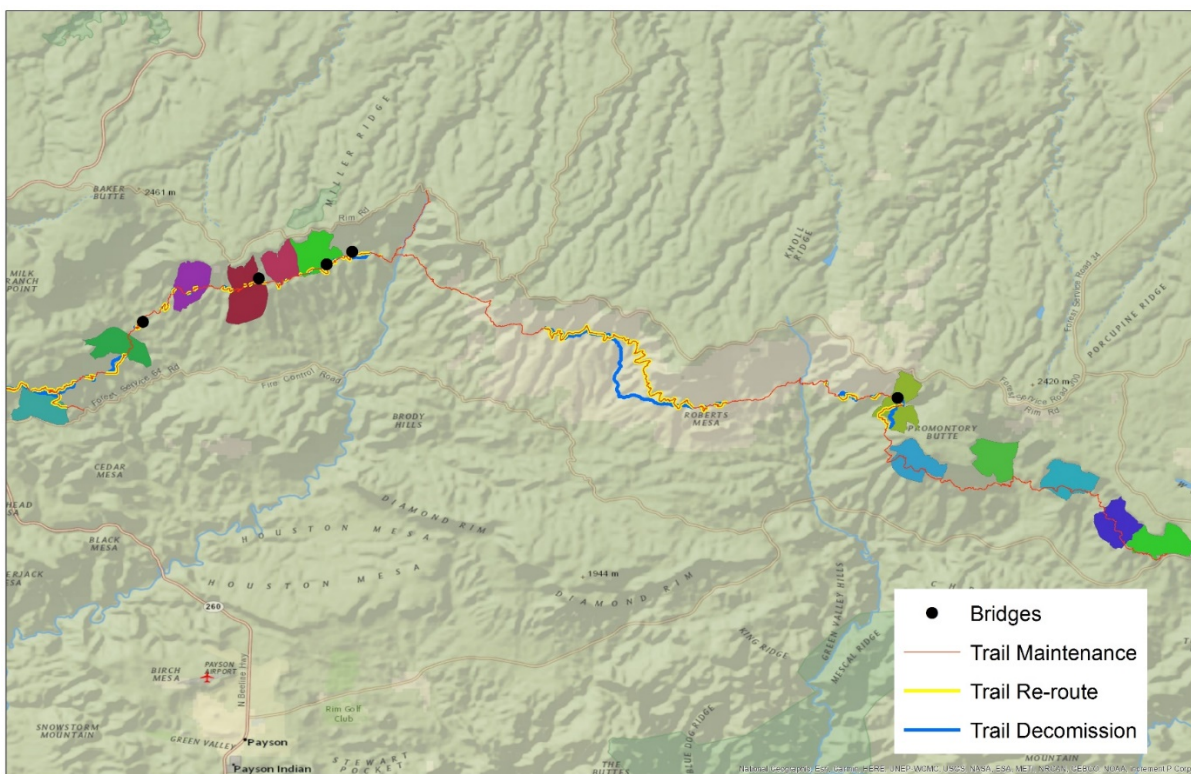


Table 5 Summary of Affected Area in MSO PACs from Proposed Trail Work

PAC Name and ID	Trail Name	Miles (Acres <sup>2</sup> ) of Proposed Re-routes	Miles (Acres) of Proposed Decommission	Proposed Change in Trail Miles (Acres)	Total Miles (Acres) of Proposed Trail Maintenance <sup>3</sup>	Bridge Installation	Notes
Cypress Hill 031204027	Red Rock Spring	0.58 (1.4)	0.42 (1.02)	+0.16 (+0.39)	0.58 (1.41)	0	Re-routes, decommissions, and maintenance roughly follow eastern boundary.
Camp Geronimo 031204019	Highline	0.08 (0.23)	0.04 (0.16)	+0.04 (+0.10)	0.88 (2.13)	0	Trail bisects PAC but avoids both cores.
Poison Spring 031204020	Highline	0.47 (1.14)	0.26 (0.63)	+0.21 (+0.51)	1.44 (3.49)	0	Trail bisects PAC and core.
Shadow Rim 031204008	Highline	0.04 (0.16)	0.28 (0.68)	-0.24 (-0.58)	0.09 (0.22)	0	Re-routes, decommissions, and maintenance roughly follows southern boundary.
East Bray 031204014	Highline	0.6 (1.45)	0.51 (1.24)	+0.09 (+0.22)	1.32 (3.20)	1	Trail bisects PAC and skirts northern boundary of core.
East Chase 031204012	Highline	0.55 (1.33)	0.45 (1.09)	+0.10 (+0.24)	1.08 (2.62)	1	Trail bisects southern portion of PAC and skirts southern core boundary.
Horton Spring 031204011	Highline	0.92 (2.23)	1.13 (2.74)	-0.21 (-0.51)	1.42 (3.44)	1 (in nest core)	Trail bisects PAC and core.
Trailhead 260 031204009	Highline	0 (0)	0 (0)	0 (0)	0.23 (0.56)	0	Trail roughly follows southern boundary of PAC.
Hole-In-Ground 031204004	Highline	0 (0)	0 (0)	0 (0)	1.67 (4.05)	0	Trail bisects PAC and core.
Maintenance Yard 031204006	Highline	0 (0)	0 (0)	0 (0)	1.57 (3.81)	0	Trail bisects PAC and core.
Promontory West 031204002	Highline	0 (0)	0 (0)	0 (0)	1.65 (4.00)	0	Trail bisects PAC and extreme west corner of core.
See Canyon 031204007	Highline	0 (0)	0 (0)	0 (0)	0.08 (0.19)	0	Very small trail segment in extreme southeastern boundary of PAC.
<b>Total in PACs</b>		<b>3.24 (7.85)</b>	<b>3.09 (7.49)</b>	<b>+0.15 (+0.36)</b>	<b>12.01 (29.12)</b>	<b>3</b>	

<sup>2</sup> Acres calculated using a 20-foot-wide disturbance zone.

<sup>3</sup> This column [*Total Miles (Acres) of Proposed Trail (Maintenance)*] reflects final maintenance miles (acres) of trail in PACs after re-routes and decommissions are completed.

Table 6 Summary of Affected Area in MSO Nest Cores from Proposed Trail Work

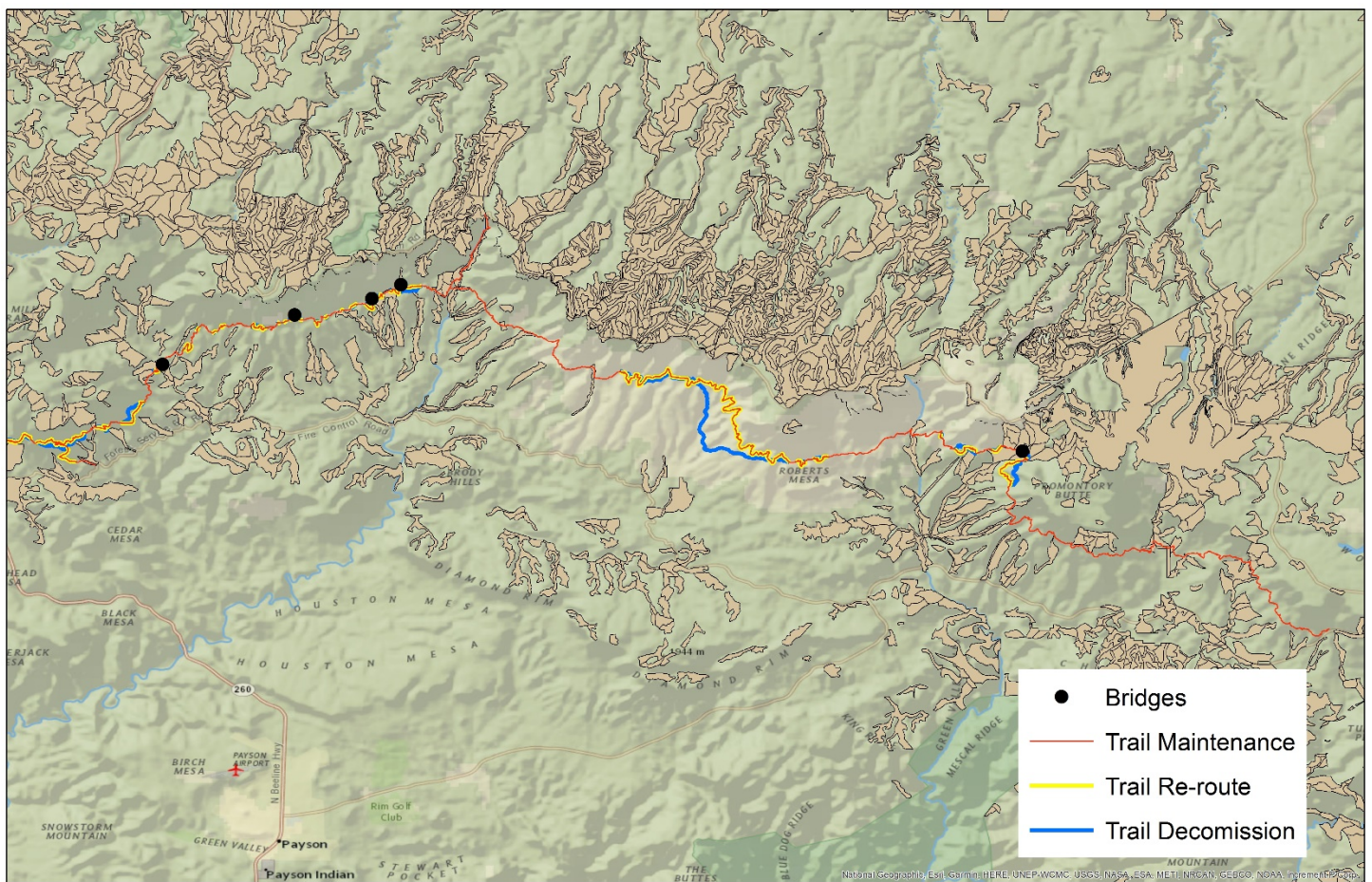
PAC Name and ID	Trail Name	Miles (Acres) of Proposed Re-routes	Miles (Acres) of Proposed Decommission	Proposed Change in Trail Miles (Acres)	Total Miles (Acres) of Proposed Trail Maintenance <sup>4</sup>	Notes
Poison Spring 031204020	Highline	0.23 (0.56)	0.08 (0.19)	+0.15 (+0.36)	0.51 (1.24)	Trail bisects PAC and core.
East Bray 031204014	Highline	0.01 (0.02)	0.0.05 (0.12)	- 0.04 (-0.10)	0.45 (1.09)	Trail bisects PAC and skirts northern boundary of core.
East Chase 031204012	Highline	0 (0)	0 (0)	0 (0)	0.04 (0.10)	Trail bisects southern portion of PAC and skirts southern core boundary.
Horton Spring 031204011	Highline	0.29 (0.70)	0.42 (1.02)	-0.13 (-0.32)	0.48 (1.16)	Trail bisects PAC and core.
Hole-In-Ground 031204004	Highline	0 (0)	0 (0)	0 (0)	0.36 (0.87)	Trial bisects PAC and core.
Maintenance Yard 031204006	Highline	0 (0)	0 (0)	0 (0)	0.65 (1.58)	Trial bisects PAC and core.
Promontory West 031204002	Highline	0 (0)	0 (0)	0 (0)	0.11 (0.27)	Trail bisects PAC and extreme west corner of core.
<b>Total in PACs</b>		<b>0.53 (1.28)</b>	<b>0.55 (1.33)</b>	<b>+0.02 (+0.05)</b>	<b>2.6 (6.3)</b>	

<sup>4</sup> This column [*Total Miles (Acres) of Proposed Trail Maintenance*] reflects final maintenance miles (acres) of trail in cores after re-routes and decommissions are completed.

### Recovery Habitat<sup>5</sup>

Very little potential MSO recovery habitat exists outside of PACs in the project area because of moderate to high intensity fires over the last few decades (February, Webber, Packrat, Highline, Rim, and Dude fires). Recovery habitat in the project area was estimated using a GIS MSO recovery layer created by Rim Country Four Forest Restoration Initiative (4FRI) Team members in close coordination with FWS and FS biologists. This layer includes designations of recovery nest/roost and foraging habitat as described in the recovery plan. The team was aware that PACs and recovery habitats on the Forest could not all be characterized as pine-oak or mixed conifer and so required queries using additional criteria. A geophysical model was used to identify recovery habitats based on slope and aspect. The results of queries were reviewed in meetings with biologists with on-the-ground familiarity for the Forest (Figure 4).

Figure 4 Overview of Modeled MSO Recovery Habitat Across Action Area



<sup>5</sup> Recovery Habitat is intended to: 1) provide protection for areas that may be used by owls; 2) foster creation of roost/nest habitat; 3) simultaneously provide managers with greater management flexibility than is allowed in PACs; and, 4) facilitate development and testing of management strategies that could be applied in PACs (USFWS 2012). Recovery habitat important to MSOs for life history needs include ponderosa pine-Gambel oak, mixed conifer, and riparian forest communities (USFWS 2012).

On January 21, 2021, Christina Akins (District Wildlife Biologist), Kelly Mott LaCroix (Forest Hydrologist), and Alex Makic (Hydrologist) hiked the Highline Trail from Washington Park west to Geronimo Trailhead. The goal was to ground truth modeled MSO recovery habitat on the 10-mile segment of trail and determine if foot bridges were needed to minimize impacts to watershed and federally listed aquatic species. The GIS MSO recovery layer identified eight stands of *foraging / dispersal* and two stands of potential *nest / roost* habitat from Washington Park to Geronimo Trailhead. During the January assessment, only one stand of *nest / roost* modeled recovery habitat east of Mail Creek met or fell just below minimum criteria outlined in Table C.3 of the recovery plan. The other nine stands lack forest structure components found in mature to old-growth forests. Key habitat elements like high canopy cover, large trees, high tree BA, multi-storied canopy, prominent hardwood component, and geophysical characteristics that enhance habitat and protect owls are also lacking (see **APPENDIX B** for habitat photos).

Habitat assessments to ground truth modeled recovery habitat were not completed on trail segments west of Geronimo Trailhead and east of Washington Park, therefore, the Forests assumes all modeled habitat as recovery habitat in those areas. Like PAC habitat, a 20-foot disturbance buffer was used to calculate acres of recovery habitat impacted by the project area.

*Table 7 Summary of Proposed Action in Recovery Habitat*

<b>Recovery Habitat Type</b>	<b>Trail Name</b>	<b>Miles (Acres) of Re-route Segments</b>	<b>Miles (Acres) of Decommission</b>	<b>Miles (Acres) of Maintenance</b>	<b>Bridge Installation</b>
<b>Nest / Roost</b>	Highline	0 (0)	0.12 (0.29)	0.31 (0.75)	0
<b>Foraging /</b>	Highline	0.74 (1.79)	0.10 (0.24)	8.25 (20.00)	1
<b>Total</b>		<b>0.74 (1.79)</b>	<b>0.22 (0.53)</b>	<b>8.56 (20.75)</b>	<b>1</b>

#### *Designated Critical Habitat<sup>6</sup>*

The FWS designated critical habitat for the MSO in 2004 on approximately 8.6 million acres of Federal lands in Arizona, Colorado, New Mexico, and Utah (USFWS 2004). The project area falls in Upper Gila Mountains critical habitat unit. Miles and acres in the table below exclude trail segments in PACs or recovery habitat and utilize the 20-foot disturbance buffer to calculate acres of affected habitat (Figure 5).

<sup>6</sup> For details on final designation of critical habitat for MSO and a description of primary constituent elements, follow this link [https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MSO/FR\\_MS0\\_CH\\_8\\_31\\_04.pdf](https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MSO/FR_MS0_CH_8_31_04.pdf)

Figure 5 Overview of MSO Critical Habitat Across Project Area

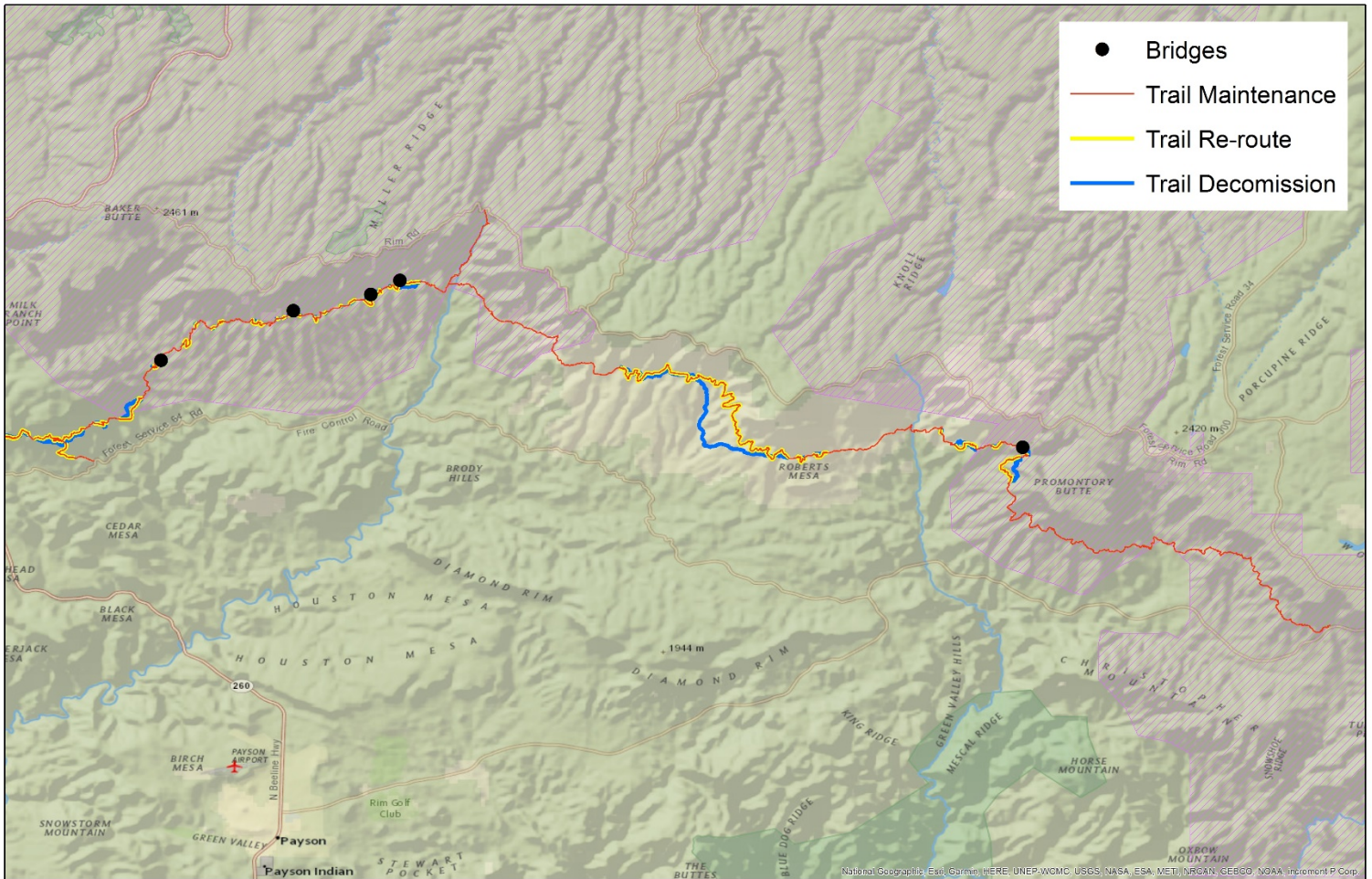


Table 8 Summary of Proposed Action in Critical Habitat

Designated Critical Habitat	Trail Name	Miles of Re-route Segments	Miles of Decommission	Miles of Maintenance	Bridge Installation
Upper Gila Mountains-UGM-10	Highline	3.61 (8.75)	2.24 (5.43)	16.90 (40.97)	5

## Effects Analysis

### *Trail Re-route, Trail Decommission, Trail Maintenance*

Trail work and associated recreation activities may affect owls directly or indirectly through disturbance (noise and human presence), habitat fragmentation, and alteration of movement patterns (USFWS 2012). The Forest is not proposing new trails into the national forest trail system; therefore, we do not anticipate an increase in current visitor use of these trails.

Direct disturbance effects to individual breeding owls will not occur because proposed trail work and bridge installation is prohibited inside nest/roost recovery habitat, PACs, or within one-quarter mile of a

PAC boundary during the MSO breeding season (CM-1) unless a biologist confirms work will not disturb nesting owls or surveys determine absence or non-nesting. Noise disturbance from mechanized equipment used to remove vegetation on re-routes or during routine maintenance may indirectly affect foraging and/or overwintering owls. Disturbance to foraging owls could cause individuals to move to undisturbed foraging areas which may lead to energetic costs and increase risk of predation (Tempel and R.J. Gutiérrez. 2003, Damiani et al. Undated). We do not anticipate this disturbance to result in a reduction in fitness or survivorship because conservation measures limit human activity in PACs and activities will be infrequently, lasting no more than 6 days at a time. Typically, work will be completed by Rim Country Trails Working Group partners, American Conservation Experience (ACE), or Youth Conservation Core (YCC) crews during 6-day hitches in groups of 2-8 people. To minimize disturbance to foraging or wintering owls, crews are prohibited from camping inside MSO PACs and nest / roost recovery habitat (CM-2).

Other indirect effects from trail activities include small modifications of owl habitat through changes in vegetation within the project footprint; however, this will result in little to no effect on forest structure (large trees, multi-story canopy, snags) and canopy cover. Trail work will not measurably reduce the availability of habitat for prey species or roost trees or affect the thermal characteristics of nest or roost groves. Some vegetation inside PACs and recovery habitat will be removed when constructing re-routes and maintaining trails. Re-route locations were selected because they followed natural openings, contours, or areas that are not heavily treed. Conservation measures limit tree removal to trees < than 6 inches dbh (CM-4). In addition to small trees, stumps, and brushy vegetation present along an identified re-route will be removed to properly construct trail segments. Hand and mechanized tools will be used to clear vegetation (96" wide) and construct trail tread (24" wide). This amounts to 1.28 acres receiving some type of vegetation clearing between 7 PACs, less than 1% of total PAC acreage. Habitat in modeled recovery habitat totals 1.79 acres receiving vegetation clearing. Trail activities will not remove key habitat components such as Gambel oak and large trees; snags and large downed logs will only be removed if they pose a threat to public safety.

Trail maintenance activities are implemented to keep trails visible and clear for hikers and to remove safety concerns. As such, trail maintenance activities focus on younger plants that are becoming established in the trail tread or branches encroaching the trail. Trail maintenance activities do not remove mature trees, but instead focus on sapling size (less than 6 inches dbh) that have grown into the trail corridor (CM-4). All proposed trail maintenance inside and out of owl habitat will be limited to linear corridors no wider than 8 feet (4 on each side of the trail tread). This amounts to 6.3 acres of vegetation manipulation between 12 PACs, less than 1% of total PAC acreage. Modified habitat in modeled recovery habitat totals 20.75 acres. Shrubs and saplings are not evenly distributed along the entire length of a trail in owl habitat, so the actual acreage of vegetation manipulation from re-routes and maintenance is less, depending on the vegetation type and site conditions of the area.

Removal of understory vegetation may have some effect on owl prey species and can result in effects however, the specific effects and their magnitude are likely to be insignificant. As mentioned above, vegetation removal activities will impact less than 1% of owl habitat, so the scope and magnitude of effects within owl habitat is extremely minor. Conservation measures are in place to reduce effects to prey base. Woody debris (large and small) removed for re-route construction or maintenance inside MSO (PACs) or owl habitat (critical and recovery habitat) will be left in as natural a condition as possible nearby in order to maintain cover for MSO prey species (CM-3).

Identified trail segments will be rehabilitated to reduce erosion potential and lasting impacts to watersheds. Decommission work will not occur inside nest/roost recovery habitat, PACs, or within one-quarter mile of a PAC boundary during the MSO breeding season (CM-1). Not all segments of trail require the same level of rehabilitation but at a minimum, visible ends of the old trail will be regraded back to the original slopes, and eroded soil will be replaced. The use of physical barriers and reducing visibility of the old trail tread are both necessary to effectively close the trails. Entry points of decommissioned trails will be naturally disguised to match surrounding terrain and blocked using downed material or nearby boulders to eliminate foot traffic, especially important for segments in PACs and owl habitat. Only 1.86 acres of PAC and recovery habitat will be impacted by proposed trail decommission work. We anticipate the same level of minimal disturbance to foraging and over-wintering owls as described above when completing re-route or maintenance work in owl habitats.

The recovery plan provides recommendations for recreation activities in PACs including assessing the presence and intensity of allowable recreational activities within PACs, and that seasonal closures of specifically designated recreational activities should be considered where appropriate. Since 2018, the Forest has implemented an annual temporary camping restriction in the action area, near Horton Springs. The purpose of the camping restriction is to reduce human disturbance to MSO in Horton Springs PAC. The Forest will continue to assess recreational activities in PACs and need for additional seasonal closures.

#### *Bridge Installation*

Three proposed bridges are in East Bray PAC, East Chase PAC, and Horton Springs PAC nest core. The remaining identified bridges are location at least 0.25 mile away from established PACs. Like trail activities, bridge installation will occur outside the breeding season, therefore, there would be no disturbance to breeding owls (CM-1). Bridge installation near Horton Spring will not require vegetation removal because the site is absent of vegetation. Vegetation removal at other bridge sites will be limited to maintain soil stability near the bridge site. Work will not require the removal of any large trees and in-stream work will be avoided. Short term disturbance from noise and human presence to foraging or overwintering owls will occur during construction which will not exceed seven days and normally last 1-3 days. Pedestrian bridges will prevent erosion of stream banks at stream/trail crossings and improve water quality. Bridge design will span bankfull flows or greater, so they do not impact geomorphology of the system (CM-5.4). Overall, bridge installation will improve stream condition in areas used by MSO.

#### *Helicopter Use*

Bridge sites with difficult access may require helicopter cargo transports by sling load to drop construction materials. Flights may occur anytime during the day between 6:00 a.m. and 5:00 p.m. Depending on payload, cargo transports could utilize a type II or type III helicopter. To avoid impacts to breeding owls, all flights will occur outside the MSO breeding season. To minimize disturbance to any resident pairs during the non-breeding season, the pilot will avoid flying directly over PACs until an approach to the drop site is required. Helitack crews will load and hook cargo at staging area adjacent to each bridge site. Likely staging areas include Bonita Pit and Horton Creek Campground. Depending on the bridge location, these staging areas limit flight distances to 2-5 miles of flying time at roughly 100 miles per hour (mph). Once the helicopter reaches the bridge site, the pilot will drop to 100 to 150 feet AGL. The cargo will be lowered and released using a minimum 100ft long line. After the cargo release, the helicopter will immediately leave the area to reduce time in the low and slow flight profile. Time in this profile is not expected to exceed 2

minutes per drop. We anticipate 1-3 flights at each bridge site. Helicopters will not stage or land in habitat occupied by special status species, including owl habitat.

Delany et al. (1999) found owl response decreases as noise source distance increases and that a 345-ft hemispherical management protective zone can minimize or eliminate an owl's flush response. It is unknown if owls in East Bray, East Chase, or Horton Springs PACs migrate out of these territories during the non-breeding season. If pairs in these territories are winter residents, or if dispersing juveniles or subadults/adults are moving through the project footprint, it is possible they could be roosting, foraging, or dispersing in areas within a 345-foot hemispherical range of helicopters. When ferrying cargo, pilots will fly above 345 AGL until they reach a drop point (CM-5.c) at which point they will be below 345 feet AGL. Researchers evaluating the response of MSO to helicopters and fixed-wing aircraft concluded owls are resilient to short duration disturbance from flights (USFWS 2012). Disturbance effects from helicopters to over-wintering, dispersing, or foraging owls are discountable and insignificant because helicopter use will be an infrequent, short term disturbance lasting less than 10 minutes (approach and cargo release) per flight and not exceed three flights at each bridge location.

#### *Critical Habitat*

The proposed action will have little to no effect on forest structure, canopy cover, and presence of water or snags. Re-route locations were selected because they followed natural openings, contours, or areas that are not heavily treed. In addition to woody brush, only trees < than 6" dbh along identified re-routes will be removed to properly construct trail segments (CM-4). Maintenance will result in trimming vegetation encroaching trails and proposed decommission work will discourage additional user created trails, repair grade, and naturalize segments to match surrounding terrain. Snags will only be removed if they pose a threat to public safety and trees will not be felled for bridge construction. Primary constituent elements (PCEs) related to maintenance of adequate prey species like woody debris and plant cover will be reduced but effects are likely insignificant. A total of 55.15 acres of critical habitat will be affected by proposed activities, most of which comes from the trail maintenance component. Conservation measures are in place to reduce disturbance and impacts to prey base, and retain primary constituent elements related to forest structure and maintenance of prey species (CM-3, CM-4).

#### *Determination of Effects – Mexican Spotted Owl and Critical Habitat*

Implementation of the proposed action may affect but is not likely to adversely affect Mexican spotted owl and its designated critical habitat. This is because:

- Adverse effects from the proposed action are discountable because there will be no effect to breeding owls and little to no effect on forest structure and canopy cover. Re-routes in Cypress Hill, Camp Geronimo, Poison Springs, East Bray and East Chase PACs are insignificant because proposed work only adds an average of 0.12 mile of additional trail per PAC.
- Conservation measures will 1) eliminate disturbance effects to breeding owls, and 2) retaining key habitat components and primary constituent elements related to forest structure and maintenance of prey species.
- Bridge installation and proposed trail work will improve stream condition and reduce sedimentation in habitat used by owls.

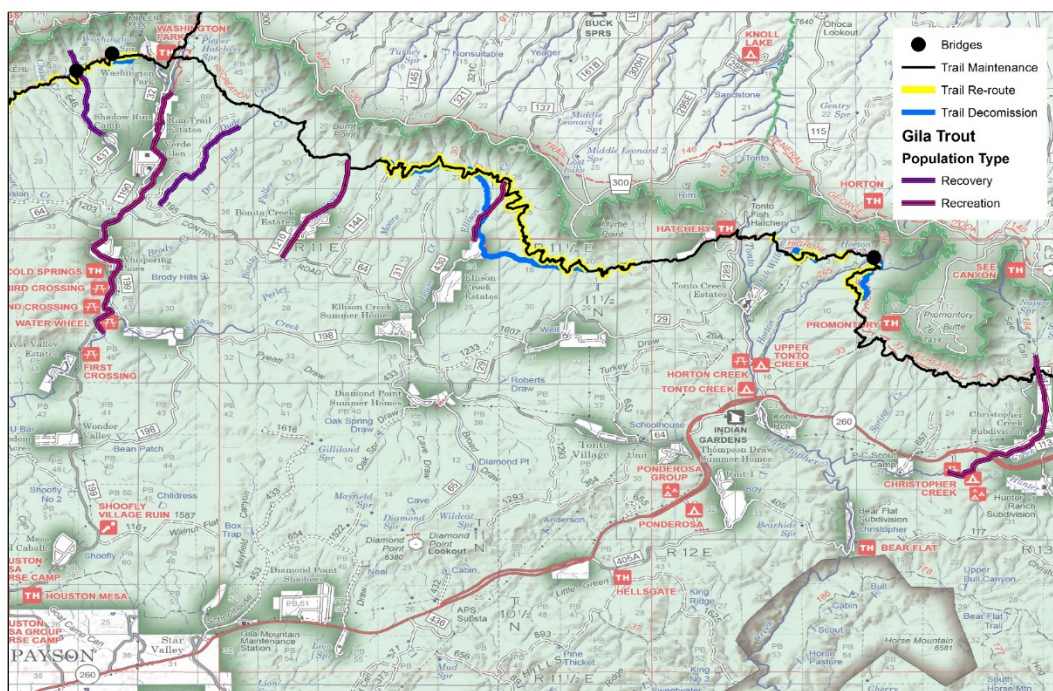
## Gila Trout (*Oncorhynchus gilae* g.)<sup>7</sup>

<b>ESA Status:</b>	Threatened, July 18, 2006
<b>Recovery Plan:</b>	September 10, 2003
<b>Critical Habitat:</b>	No
<b>Effects Finding (species)</b>	May Affect, not Likely to Adversely Affect

### Status Adjacent to the Project Area

Since 2015, AGFD has established two Gila trout recovery populations in the project area at Dude Creek and Chase Creek. Surveys have documented natural recruitment in in both streams. In 2019, AGFD established the first Gila trout recreational fishery<sup>8</sup> on the Forest in East Verde River. Arizona Game and Fish Department has identified three additional streams in the project area for future establishment of Gila trout recreational populations. Future establishments are likely to occur in one to three years and included in the analysis. Trail re-route and decommission activities will not occur across occupied or identified future establishment streams, but these streams may be affected by bridge work or trail maintenance. Proposed pedestrian bridge installation crosses one occupied stream, Chase Creek (Figure 6).

Figure 6 Overview of Gila Trout Populations (w/ Future Establishment) Across the Project Area



<sup>7</sup> For life history information on the Gila trout, please visit <https://drive.google.com/drive/folders/0BwLs0i-QWFssUFRGcjRrTmVveDA>

<sup>8</sup> Gila trout stocked recreational streams (under ESA section 4(d) recreational fishery) would not contribute to recovery actions. Fish used for recreational stocking will be produced by Mora National Fish Health and Technology Center after all annual recovery needs are met. Recreational stock may also come from Canyon Creek Hatchery.

Table 9 Summary of Gila Trout Populations Affected by Proposed Activities

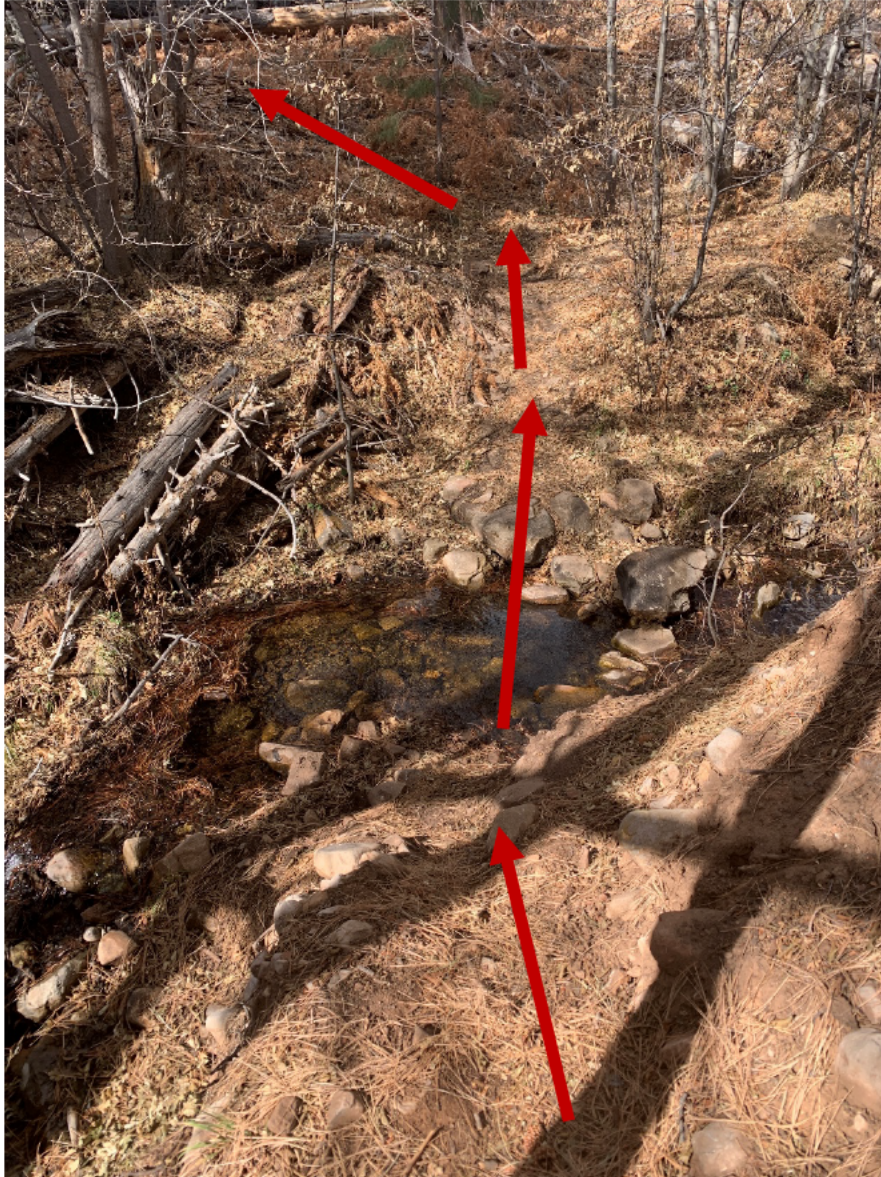
Site Name	Population Type	Maintenance	Bridge	Notes
Chase Creek	Established Recovery	X	X	Gila trout stocked up to Highline Trail. No natural barriers preventing fish moving north of Highline Trail.
Dude Creek	Established Recovery	X	-	Proposed activities will have no effect to Gila trout in Dude Creek. There is a natural fish barrier south of Highline Trail.
Bonita Creek	Future Recreation	X	-	AGFD identified stream for Gila trout recreational fishery.
Ellison Creek Proper	Future Recreation	X	-	AGFD identified stream for Gila trout recreational fishery.
East Verde River	Established Recreation	X	-	Proposed activities will have no effect to Gila trout in East Verde River. There is a natural fish barrier south of Highline Trail.
Christopher Creek	Future Recreation	X	-	AGFD identified stream for Gila trout establishment.

## Effects Analysis

### *Bridge Installation*

The Forest has identified one pedestrian bridge installation across an established Gila trout recovery stream, Chase Creek (Figure 7). On February 17, 2021, Alex Makic and Kenny Orihuela (hydrologists) conducted a stream survey of Chase Creek to inform bridge design. Using cross sectional data and longitudinal profile collected during the stream survey, it was determined under the Rosgen classification system, this stream is a B4 type. This stream type has a moderate sensitivity to disturbance rate, excellent recovery potential, moderate sediment supply, low streambank erosion potential, and moderate vegetation controlling influence (Rosgen 1994, 1996).

*Figure 7 Bridge Site Across Chase Creek (Red Arrows Indicate Trail)*



Disturbance to Gila trout will be temporary, short-term, and only incurred during construction of the pedestrian bridge which will not exceed seven days and normally last 1-3 days. Conservation measures (CM-5.1-6) are in place to greatly reduce or eliminate direct impacts to Gila trout. Installation of bridges in streams occupied by Gila trout will occur during the low flow period in October (CM-5.5.a) consistent with the CM-1 timing restriction to reduce disturbance to breeding Mexican spotted owls. Installation during the low flow period will eliminate the need for instream work and avoid spawning season which can extend through June depending on the stream temperature and elevation (USFWS 2003). A biological monitor

will be on site (CM-9) to ensure crews do not move about the site by traversing through the stream and that materials in the streambed are not removed.

Water quality forms a major component of trout habitat and can influence feeding and breeding success rates, disease levels, growth rates, and predation rates. One element of water quality critical to trout is the level of turbidity or sediment load (USFWS 2003). Fine sediments can reduce prey detection, alter trophic levels, reduce oxygen along the substrate, smother redds, and damage gills (Kjelland et al. 2015). It is possible for construction activities near streams to increase the amount of new suspended sediment loads into channels but conservation measures under the proposed action make this possibility unlikely to occur. Installing an open bottom, free-span (no mid-span pier) pedestrian bridge at low flow eliminates the need for any instream work that could suspend sediment (CM-5.5.a, CM-5.5.b). Proposed bridge sills (or abutments) which support both ends of the bridge will be secured by rebar resulting in negligible ground disturbance and no displaced bankside material (CM-5.5.d). Designated areas for equipment staging and stockpiling materials will be established away from stream banks further reducing the likelihood of construction activities adding sediment into the stream (CM-5.1). Over time, if conditions warrant the installation of a pedestrian bridge at other streams occupied by Gila trout, the Forest will coordinate with FWS prior to installing any structures and follow conservation measures CM-5.1-6, CM-9, and CM-10.

Bridge installation will have no effect on key habitat elements like, woody debris, or areas providing refuge to trout. Bridge design will span bankfull flows or greater, so bridge structures do not impact geomorphology of the system or reduce impacts to woody recruitment into the stream (CM-5.3). The open bottom and free-span design will accommodate upstream fish movement and be wide enough to maintain consistent flow within the stream (CM-5.4). Areas providing refuge to Gila trout like undercut banks, large woody debris, deep pools, exposed root masses of trees at water's edge, and overhanging vegetation will not be removed during bridge construction.

### *Trail Maintenance*

Trails proposed for maintenance cross occupied trout streams, however, Chase Creek and potentially future recreational trout populations are the only populations that could see minor disturbance from trail maintenance. Natural barriers in East Verde River and Dude Creek limit the distribution of Gila trout to the upper stream reaches where the Highline Trail intersects each stream. Currently, AGFD does not have plans to establish trout above these barriers (C. Gill, personal communication, January 8, 2021). The installation of a pedestrian foot bridge along Chase Creek and the existing bridge at the East Verde River crossing eliminates the need for ground disturbing maintenance activities at these sites.

Frequency of trail maintenance activities at established stream crossings could occur once per year but often once every five years and take less than one hour. Work may involve the use of boulders or removing encroaching vegetation. Since proposed maintenance is on established trails, the likelihood of removing vegetation providing shade to the system is low. Trail crossings are maintained by taking advantage of naturally occurring boulders or bed rock, allowing hikers to cross streams on top of rock instead of traversing through the stream channel. Although unlikely, there may be future need to place boulders in crossings absent of bed rock or pedestrian bridges, which could potentially disrupt Gila trout if present. This type of activity will be encouraged to take place when crossings are dry or during low flow periods (CM-10) when a biological monitor is present (CM-9). Depending on the site, installation of a pedestrian bridge may be a better option because bridges reduce maintenance activities that can disturb trout and often

recommended when trails intersect streams occupied by federally listed aquatic species. If conditions warrant the installation of a pedestrian bridge at other streams occupied by Gila trout, the Forest will coordinate with FWS prior to installing any structures and follow conservation measures CM-5.1-6, CM-9, and CM-10.

Long-term, proposed activities will have a beneficial effect on Gila trout and its habitat by stabilizing trails, eliminating the need for hikers to traverse through stream channels, and reducing erosion and amount of sediment into streams.

*Determination of Effects – Gila Trout*

Implementation of the proposed action may affect but is not likely to adversely affect Gila trout. This is because:

- Direct and indirect impacts from proposed activities to trout are discountable and insignificant because bridge installation will occur during low flow periods outside of spawning season and will not 1) exceed 7 days, 2) require in-stream work, 3) add new suspended sediment into the stream, 4) impact presence of woody debris or refuge habitat, or 5) impact upstream / downstream movements of trout; trail maintenance at stream crossings is an infrequent activity, occurring once every 1 to 5 years when crossings are dry or during low flow periods when a biological monitor is present.
- A biological monitor will be present when proposed activities at stream crossings occupied by Gila trout have potential to cause disturbance.
- Dude Creek recovery population and East Verde River recreational population will not be affected by the proposed action because of natural fish barriers below the Highline Trail.
- Proposed activities at Gila trout streams are designed to improve habitat (instream and riparian) where the Highline Trail crosses streams. Bridges will reduce sediments caused by recreational activities and not affect woody debris recruitment into the stream channel resulting in benefits to Gila trout in the long-term.

**Chiricahua leopard frog (*Lithobates [Rana] chiricahuensis*)<sup>9</sup>**

<b>ESA Status:</b>	Threatened, June 13, 2002
<b>Recovery Plan:</b>	2007
<b>Critical Habitat:</b>	March 20, 2012
<b>Effects Finding (species)</b>	May Affect, Likely to Adversely Affect
<b>Effects Finding (critical habitat)</b>	May Affect, Likely to Adversely Affect

<sup>9</sup> For life history information on the Chiricahua leopard frog visit [https://www.azgfd.gov/w\\_c/edits/documents/Lithchir fi\\_002.pdf](https://www.azgfd.gov/w_c/edits/documents/Lithchir fi_002.pdf)

### Status within the Action Area

The Highline Trail intersects the Upper Verde Management Area in Recovery Unit 5 outlined in the CLF Recovery Plan. Several tributaries known to inhabit Chiricahua leopard frogs are adjacent to various components of proposed activities (Figure 8).

Figure 8 Overview of CLF Sites Across Action Area (CLF Sites represented by Green Symbol Points)

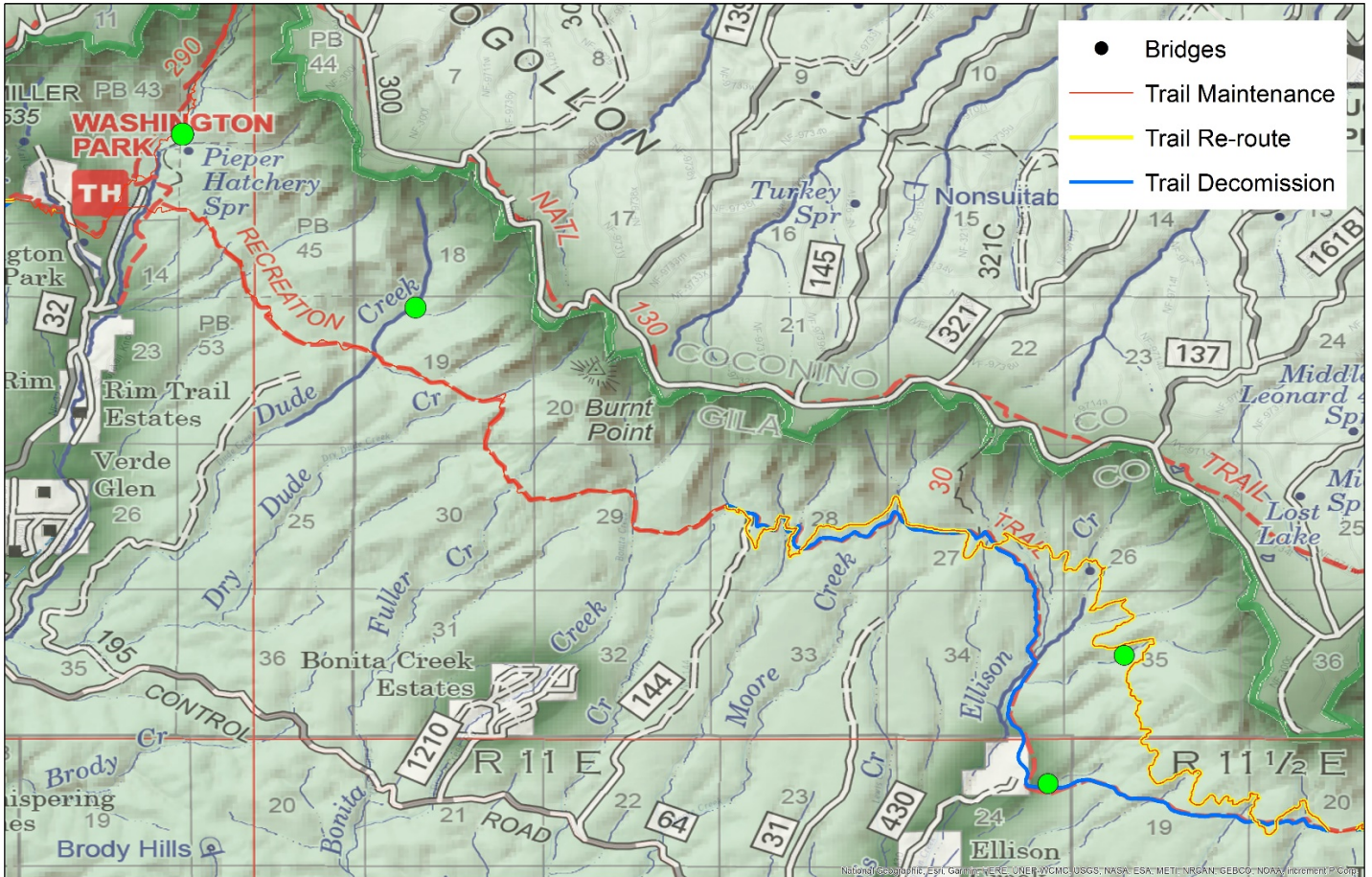


Table 10 Summary of CLF Sites Impacted by Proposed Activities

Site Name	NUM	Re-route	Decommission	Maintenance
Pieper Hatchery Spring	TON-0324	-	-	X
Tributary 3 of Ellison Creek	TON-0321	X	-	X
Tributary 4 of Ellison Creek	TON-0275	-	X	-
Ellison Creek Proper	TON-0225	-	-	-
Dude Creek	TON-0462	-	-	X

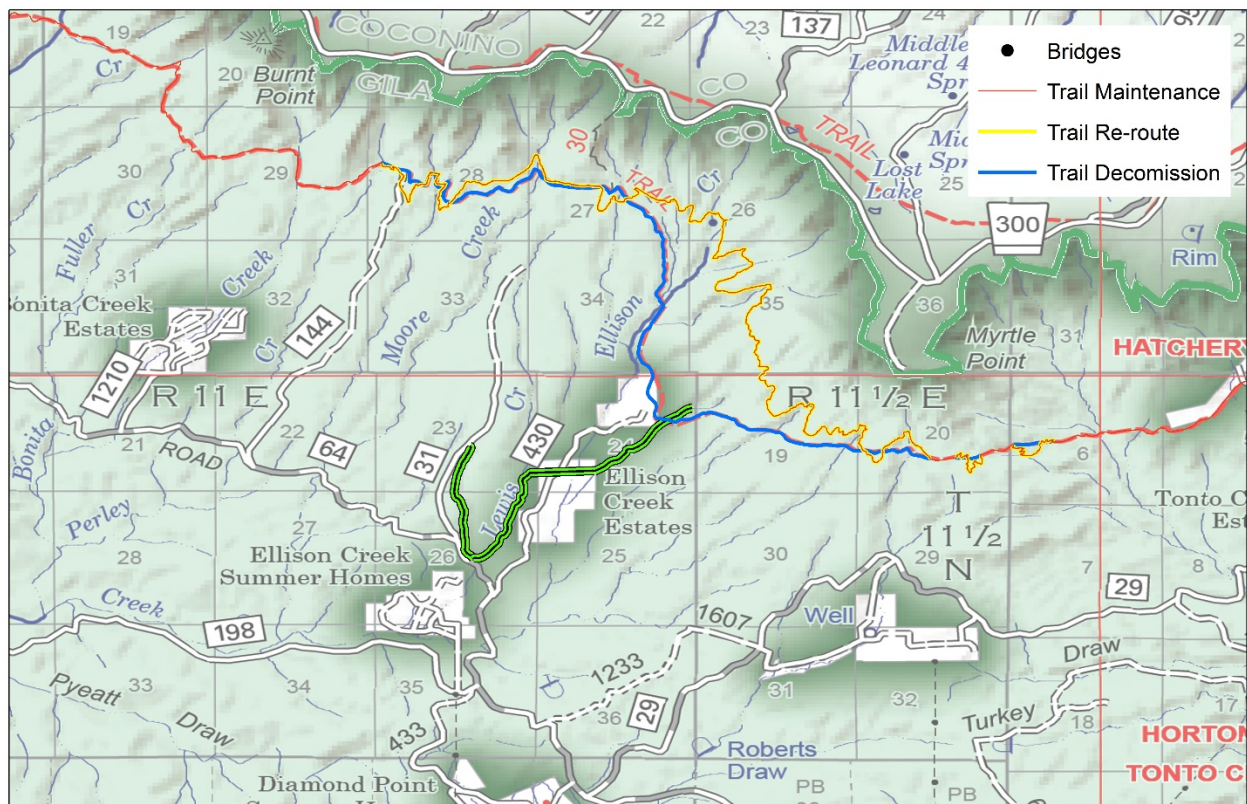
Four recorded sites are located adjacent to proposed trail activities. Protocol surveys report Pieper Hatchery Spring as the most stable site while Ellison Creek and its tributary sites have had inconsistent occupancy

over the last five years with low detection numbers. Latest confirmed CLF detections occurred in 2016 at Ellison Proper and Tributary 4; frogs have not been detected in Tributary 3 since 2012. In addition to the sites displayed in Table 9, suitable habitat exists where trails cross drainages with perennial water. Suitable habitat includes all perennial waters 1) within elevational range of the frog (3,400 to 9,000 feet), 2) contain a mixture of aquatic and perimeter vegetation to provide oviposition sites, thermoregulation, and refuge from predators, 3) absent or low densities of nonnative aquatic species and 4) have a variety in substrate and range of shallow to deeper water for potential hibernacula. (USFWS 2007). Suitable habitat types within the project area include springs and streams. Provided these sites do not have high densities of nonnative aquatic species, they could be considered suitable sites for frogs.

*Designated Critical Habitat<sup>10</sup>*

Ellison and Lewis Creeks is the only critical habitat subunit adjacent to project work and will only be impacted by trail decommission activities. Re-routes, maintenance, and bridge locations are not proposed along CLF designated critical habitat (Figure 9).

*Figure 9 CLF Critical Habitat Affected by Proposed Action (Represented by Green / Black Line)*



<sup>10</sup> For information on designated critical habitat for Chiricahua leopard frog, please visit [https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/CLF/CLF\\_2012\\_fCHrule\\_Fed-Reg.pdf](https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/CLF/CLF_2012_fCHrule_Fed-Reg.pdf)

## Effects Analysis

### *Trail Re-route, Trail Decommission, and Trail Maintenance*

Trail activities are proposed near occupied CLF sites and suitable habitat but will not occur during the frog's active period (April through September) for sections of trail within 0.1 mile of an occupied site or critical habitat unless protocol surveys show the site is unoccupied (CM-6). Activities are most likely to occur in October during a low flow period which reduces the need for instream work (CM-10). A biological monitor will also be present when activities have potential to disturb over-wintering frogs (CM-9). The presence of a biological monitor and timing restriction makes it unlikely that proposed activities will directly result in death or injury of frogs. Any equipment used around stream crossings will be decontaminated to prevent the spread of chytrid fungus (CM-7).

Tributary 3 is the only site impacted by re-route work. The existing trail crosses Ellison Creek proper and then follows the stream bank for over 0.5 mile. Proposed re-routes reduce the trail segment paralleling Ellison Creek, moving it north to the uplands where it will cross Tributary 3 0.2 miles north of where frogs have been infrequently observed. Vegetation will be removed when constructing the re-route segment crossing Tributary 3. Any trees < than 6 inches dbh, stumps, and brushy vegetation present along the identified re-route will be removed to properly construct the trail segment. Hand and mechanized tools will be used to clear vegetation (96" wide) and construct trail tread (24" wide). Vegetation clearing will occur up to the stream bank. Existing boulders will be left in place if they provide adequate steppingstones for visitors to safely cross the wetted area. If additional boulders are needed, the biological monitor would be present to ensure direct impacts to any life stage does not occur (CM-9). Impacts to frogs from re-route work are unlikely because frogs are not reasonably certain to occur there. Data collected during protocol visual encounter surveys describe Tributary 3 as unsuitable habitat for frogs, with frogs only detected once post release at the confluence of Ellison proper and no detections in Tributary 3 itself. (C. Mosley, personal communication, February 8, 2021).

Tributary 4 is the only site impacted by trail decommission work. The trail that crosses Tributary 4 will be rehabilitated to reduce erosion potential and lasting impacts to watersheds. A biological monitor will be present during decommission work to ensure direct effects to over-wintering frogs do not occur (CM-9). In stream decommission work will not occur. Not all segments of trail require the same level of rehabilitation but at a minimum, visible ends of the old trail will be regraded back to the original slopes, and eroded soil will be replaced. The use of physical barriers and reducing visibility of the old trail tread are both necessary to effectively close the trails. Entry points of decommissioned trails will be naturally disguised to match surrounding terrain and blocked using downed material or nearby boulders to eliminate foot traffic.

Trail maintenance activities are intended to stabilize trails and reduce erosion, so overall the intent of maintenance is consistent with recovery of the species and beneficial long-term. As noted above, maintenance at stream crossings is a short duration activity typically occurring once every 1-5 years and may involve clearing encroached vegetation or moving boulders. Although unlikely, there may be future need to place boulders in crossings absent of bed rock or pedestrian bridges, which could potentially disrupt frogs if present. Like similar activities in trout streams, this type of activity will be encouraged to take place when crossings are dry or during low flow periods (CM-10) when a biological monitor is present (CM-9). Further, maintenance activities at or adjacent to Pieper Hatchery Spring and Dude Creek will not require moving boulders or create ground disturbance because of existing pedestrian bridges or presence of bedrock. The duration and infrequency of this activity in conjunction with conservation measures (CM-6,

CM-7, CM-9, CM-10) make any direct or indirect effects from trail maintenance to frogs insignificant and discountable.

### *Bridge Installation*

Bridge installation has not been identified where the Highline Trail re-route crosses Tributary 3, however, over time, if conditions warrant the installation of a pedestrian bridge to reduce sedimentation in Ellison watershed or any suitable habitat, the Forest will coordinate with the FWS prior to installing any structures and follow conservation measures CM-5.1-6, CM-6, CM-7, CM-9, and CM-10. If bridge installation occurs at occupied CLF sites, we expect similar minor disturbances described for Gila trout. Disturbance to CLFs of any life stage will be temporary, short-term, and only incurred during construction of the pedestrian bridge which will not exceed seven days and normally last 1-3 days. Conservation measures (CM-5.1-6) are in place to greatly reduce or eliminate direct impacts to frogs. Installation will occur during the low flow period in October (CM-5.5.a, CM-6) consistent with the CM-1 timing restriction to reduce disturbance to breeding Mexican spotted owls. Installation during the low flow period will eliminate the need for instream work and avoid the frogs expected breeding season. Although uncommon in higher elevation sites, protocol surveys have detected egg masses in all months of the year (. A biological monitor will be on site (CM-9) to ensure crews do not move about the site by traversing through the stream and that materials in the streambed are not removed. The presence of a biological monitor and timing restriction makes it unlikely that proposed activities will directly result in death or injury of over-wintering frogs.

It is possible for construction activities near streams to increase the amount of new suspended sediment loads into channels or impact water quality but conservation measures under the proposed action make this possibility unlikely to occur. Installing an open bottom, free-span (no mid-span pier) pedestrian bridge at low flow eliminates the need for any instream work that could suspend sediment (CM-5.5.a, CM-5.5.b). Proposed bridge designs across streams occupied by federally listed aquatic species will have sills (or abutments) supporting both ends of the bridge secured by rebar resulting in negligible ground disturbance and no displaced bankside material (CM-5.5.d). Designated areas for equipment staging and stockpiling materials will be established away from stream banks further reducing the likelihood of construction activities adding sediment into the stream (CM-5.1).

Bridge installation will have no effect on key habitat elements or areas providing refuge important to frogs. Bridge design will span bankfull flows or greater, so bridge structures do not impact geomorphology of the system or reduce impacts to woody recruitment into the stream (CM-5.3). The open bottom and free-span design will be wide enough to maintain consistent flow within the stream (CM-5.4) and will not alter the frog's ability to disperse within the channel. Areas providing refuge to frogs and tadpoles or suitable oviposition sites like undercut banks, woody debris, emergent or submergent vegetation, deep pools, exposed root masses or overhanging vegetation will not be removed during bridge construction.

### *Critical Habitat*

Trail Decommission activities intersect one section of critical habitat running perpendicular to rehabilitation work in Tributary 4. As describe above, the purpose of trail decommission is to reduce erosion potential and lasting impacts to the watershed. Proposed work will not impact standing bodies of water, influence the presence of nonnative species, contribute to the spread of chytrid fungus (CM-7), block movement of frogs, change availability of upland habitat, or impact dispersal or non-breeding habitats. Decommission activities will benefit elements of critical habitat by removing the trail system completely, grading that trail

back to original slopes, replacing soil in eroded areas, and reducing human disturbance. The old trail that crosses critical habitat will be naturally disguised to match surrounding terrain and blocked using downed material or nearby boulders to eliminate foot traffic. Given this reach is occupied by CLFs, a biological monitor will be present during activities that could cause disturbance to frogs if present (CM-10). The monitor will also ensure decommission activities at the stream crossing do not remove habitat elements important for breeding, non-breeding, and dispersal.

#### *Determination of Effects – Chiricahua Leopard Frog*

Implementation of the proposed action may affect but is not likely to adversely affect Chiricahua leopard frogs. This is because:

- Direct and indirect impacts from proposed activities to frogs are discountable and insignificant because activities will occur during low flow periods outside the frogs expected breeding season when a biological monitor is present and will 1) not contribute to the spread of chytrid fungus, 2) not impact the frogs ability to disperse, and 3) require little to no in-stream work.
- Impacts to frogs from re-route work are unlikely because frogs are not reasonably certain to occur in Tributary 3. Impacts to frogs from decommission work are unlikely because instream work will not occur in Tributary 4. Impacts to frogs from trail maintenance at stream crossings is an infrequent activity, occurring once every 1 to 5 years when crossings are dry or during low flow periods.
- Proposed activities are designed to improve habitat (instream and riparian) where the Highline Trail crosses wetted areas. If the need arises, bridges will reduce sediments caused by recreational activities resulting in benefits to frogs and critical habitat in the long-term.
- Elements of critical habitat will benefit from proposed trail decommission activities.

## **CUMULATIVE EFFECTS**

Cumulative effects include effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Activities on federal land that could affect MSO, CLF and Gila trout are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Activities in the vicinity of the action area that are reasonably certain to occur in MSO, CLF or Gila trout habitat, but are not subject to section 7 analysis, include illegal activities and actions on private lands. There is no state, private, or tribal land within the action area, however, several private inholdings border project work including the Community of Pine, Geronimo Boy Scout Camp, Shadow Rim Girl Scout Camp, Bray Creek Ranch, Mail Creek Ranch, Washington Park Estates, and Christopher Creek Mountain Meadow Subdivision.

Examples of illegal activities include inappropriate use of off-highway vehicles, illegal woodcutting, and poaching. Illegal activities are difficult to predict and are assumed to occur indefinitely and uniformly throughout the vicinity of the action area and are not expected to significantly contribute to the adverse impacts from the proposed action.

Activities occurring on private lands may include residential development, farming/ranching, road construction and maintenance, and mineral exploration. These activities could potentially affect habitat through habitat destruction or degradation and harassment of individuals. Many of the private lands near or within the action area have already been developed and no new major developments of private lands are expected to occur; therefore, future activities on private lands are not expected to significantly contribute to adverse impacts to MSO, CLF or Gila trout from the proposed action.

**Prepared by:**

February 19, 2021

Christina Marie Akins

Date

Wildlife Biologist – Tonto National Forest, Payson and Pleasant Ranger Districts

## REFERENCES

- Kjelland, M.E., Woodley, C.M., Swannack, T.M. et al. A review of the potential effects of suspended sediment on fishes: potential dredging-related physiological, behavioral, and transgenerational implications. *Environ Syst Decis* 35, 334–350 (2015). <https://doi.org/10.1007/s10669-015-9557-2>
- Rosgen, D.L., 1994. A Classification of Natural Rivers. *Catena* 22:169–199.
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- Tempel, D.J., and R.J. and Gutiérrez. 2003. Fecal corticosterone levels in California spotted owls exposed to low-intensity chainsaw sound. *Wildlife Society Bulletin* 31:698-702.
- U.S. Fish and Wildlife Service (USFWS). 2003. Gila Trout (*Oncorhynchus gilae*) Recovery Plan, third revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, NM.
- U.S. Fish and Wildlife Service (USFWS). 2004. Endangered and threatened wildlife and plants: Final determination of critical habitat for the Mexican spotted owl. *Federal Register* 50 CFR Part 17.
- U.S. Fish and Wildlife Service (USFWS). 2007. Chiricahua Leopard Frog (*Rana chiricahuensis*) Recovery Plan. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, NM. 149 pp. Appendices A-M.

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**File Code:** 2350  
**Date:** August 17, 2022

Executive Director, Arizona Water Protection Fund  
Arizona Department of Water Resources  
1802 W Jackson St. Box #79  
Phoenix, AZ 85007

Dear Mr. Ruben Teran:

The Tonto National Forest Payson Ranger District strongly supports the National Forest Foundation's (NFF) proposal to the Arizona Water Protection Fund (AWPF) to construct a pedestrian bridge at the Unnamed Tributary to Chase Creek to improve watershed health and water quality in the East Verde Headwaters Watershed located on the Tonto National Forest. This proposal and NFF's efforts have our full support and cooperation.

The NFF has been working assiduously to restore the iconic Highline Trail, a National Recreation Trail, through its Highline Trail Restoration Initiative. This initiative brings together the Forest Service (FS) and a variety of community partners to implement critical projects for the protection and long-term sustainability of the EV Watershed. This proposed bridge project, in association with ongoing NFF trail improvement efforts, will significantly reduce sediment loading into Chase Creek and its tributaries. This crossing will both improve water quality and increase sustainability of habitat for Gila trout and other aquatic species in the EV River system.

Funds through AWPF will be highly leveraged, providing a crucial match for current funding sources. Strategic investments in watershed improvement projects such as this assist the FS in achieving the many watershed restoration objectives outlined in the 2021 Watershed Restoration Action Plan (WRAP). Support from AWPF will directly enhance and protect water resources in Arizona.

The NFF has a strong track record of collaborating with the U.S. Forest Service and other partners to manage a variety of projects that benefit our watersheds and forests. We are confident in the NFF's work and encourage your support for their proposal to the Arizona Water Protection Fund. Thank you for considering this important project that will work towards protecting and restoring the EV Headwaters on the Tonto National Forest. All improvements to the forest trail system will remain the sole responsibility and ownership of the USFS Tonto National Forest.

Sincerely,

MATT PACIOREK  
Payson and Pleasant Valley District Ranger



August 22, 2022

Arizona Department of Water Resources  
1802 W Jackson St. Box #79  
Phoenix, AZ 85007  
Attn: Reuben Teran, Executive Director



Dear Mr. Teran,

The Arizona Trail Association is pleased to support the National Forest Foundation's (NFF) proposal to the Arizona Water Protection Fund (AWPF) to construct a water crossing along the Highline Trail in the East Verde Headwaters Watershed.

The Highline National Recreation Trail shares 17 miles with the Arizona National Scenic Trail and is a highly visited recreation destination year-around. The heavy traffic of hikers, runners, backpackers and mountain bikers has increased erosion and sediment deposition into streams where recreation trails overlap like the Highline Trail at Chase Creek. Improving the connectivity of Arizona trails is a vital element to improving watershed conditions and stream connectivity.

The Arizona Trail Association is currently partnering with the NFF and Tonto National Forest to develop, implement, and oversee projects that improve the environmental conditions and user safety on the Tonto National Forest. The Highline Trail Restoration Initiative consists of members from surrounding communities and a diversity of forest user groups to enhance conservation practices and protect Arizona watersheds, wildlife and the public. This initiative has sparked progress toward improving watershed health and water quality while making the trail experience better for all its users. This proposed bridge project will significantly reduce the impact of erosion on Chase Creek and its tributaries and aquatic species, and add more value to the work being done on the Tonto.

We strongly support every effort to improve and restore the East Verde Headwaters Watershed on the Tonto and encourage your support for the NFF's proposal to the Arizona Water Protection Fund. The East Verde is one of only four rivers the Arizona Trail crosses on its 800-mile journey from Mexico to Utah, and the Verde is the only waterway with Wild & Scenic River Status. On behalf of our 2,300 members, 200 business partners, and tens of thousands of volunteers and trail users, we encourage your support of this important project.

Please reach out with questions anytime. I sincerely appreciate the work you do.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew J. Nelson".

Matthew J. Nelson  
Executive Director  
matthew@aztrail.org  
(520) 404-7992

Jim Stroger  
Gila Trout Chapter #530 Trout Unlimited President  
Arizona Council Trout Unlimited Conservation Chair  
401 W. Christopher Point  
Payson, AZ 85541

August 19, 2022

Reuben Teran  
Executive Director, Arizona Water Protection Fund  
Arizona Department of Water Resources  
1802 W. Jackson St. Box #79  
Phoenix, AZ 85007

Dear Executive Director Teran,

As Gila Trout Chapter #530 Trout Unlimited (GTTU) President and the Conservation Chair of the Arizona Council of Trout Unlimited, I wish to express our full support for the construction of a water crossing over an important tributary to Chase Creek along the Highline Trail. Most of our GTTU members live in and around Payson, AZ, and we have a particular interest in protecting and enhancing native and wild trout streams in our area. Chase Creek is also a very important stream to TU members across the state as the AZTU Council has identified Chase Creek and its tributaries as one of our priority waters in need of protection and improvement to benefit native trout.

This proposal from the National Forest Foundation to the Arizona Department of Water Resources Arizona Water Protection Fund serves a number of recreational purposes, as well as being an important conservation measure. From a TU perspective, this project is extremely valuable to the Gila trout recovery efforts in the stream.

The Arizona Game and Fish Department (AZGFD) has identified Chase Creek, and the tributary to Chase Creek where this crossing is being planned, as a vital stream for Gila trout recovery in waters where they were once found. There are very few streams in that historic range that meet all of the requirements for reintroduction of these native trout.

The current water crossing is a deterrent to the recovery efforts of this recovery population of Gila trout. There is an existing well-used path that is causing increased erosion into the creek, and adding sedimentation to the stream bed that could interfere with spawning activity as well as the ability to maintain stream depth in the pools important to these trout seeking cover and the cooler temperatures that shaded, deep pools provide.

The proposed bridge will provide important mitigation to these existing eroded paths, and provide a long-term solution for stream crossing that will benefit this recovery population of Gila trout. Trout Unlimited has partnered with AZGFD and Tonto National Forest (TNF) on several projects in the past to support stream improvement work on several streams in TNF, and we are in full support of this project.

We appreciate the NFF's ongoing work on the Highline Trail and improvements to the watershed that they are making. Thank you for considering support for this important project through the Arizona Water Protection Fund.

Sincerely,

Jim Stroger  
Gila Trout Chapter #530 Trout Unlimited President  
Arizona Council Trout Unlimited Conservation Chair



Reuben Teran  
Executive Director, Arizona Water Protection Fund  
Arizona Department of Water Resources  
1802 W Jackson St. Box #79  
Phoenix, AZ 85007

Dear Mr. Teran,

Per the Arizona Water Protection Fund 2023 Grant Cycle, this letter documents and confirms match funds dedicated to the work associated with the National Forest Foundation's (NFF) proposal for Water Crossing Improvements on Unnamed Tributary at Chase Creek 2: East Verde Watershed Protection.

The NFF works each year to partner with many organizations to collect funds that we use for on-the-ground restoration work across the Salt and Verde Watersheds through the Northern Arizona Forest Fund (NAFF). With each organization, the NFF has a unique funding agreement, but always for the purpose of watershed health within the watersheds.

Through the NAFF, we can dedicate funds to multiple projects with input from the Forest Service and Advisory Council. We are dedicating funds needed to implement the Water Crossing Improvement Project at the Unnamed Tributary to Chase Creek 2. The NFF expects to bring match for the abutment construction and hardened water crossing groundwork. The NFF will partner with the Arizona Trail Association to complete the installation of abutments and construction of the hardened crossing. Please contact me if you need any additional specifics on the value of funds that NFF has so far brought to the scope of work required to complete these water crossing improvements.

As part of this grant application, the NFF confirms here, and is pledging NAFF dollars and volunteer time as delineated in the Detailed Budget Breakdown and Matching Funds Breakdown, to match the funds awarded via the AWPf's 2023 Grant Cycle.

Sincerely,

A handwritten signature in black ink, appearing to read "Rebecca Davidson", written over a faint, light-colored watermark of the signature.

Rebecca Davidson  
Southwest Region Director

# **National Forest Foundation Act**

Public Law 101-593—Title IV—Nov. 16, 1990

As Amended by Public Law 103-106—Oct. 12, 1993



# NATIONAL FOREST FOUNDATION ACT

## SECTION 401.SHORT TITLE.

This title may be cited as the National Forest Foundation Act Amendment Act of 1990.

## SEC. 402. ESTABLISHMENT AND PURPOSES OF FOUNDATION 16 USC 583j

- (a) ESTABLISHMENT.-There is established the National Forest Foundation (hereinafter referred to as the “Foundation”) as a charitable and nonprofit corporation domiciled in the District of Columbia.
- (b) PURPOSES.-The purposes of the Foundation are to-
  - (1) encourage, accept, and administer private gifts of money, and of real and personal property for the benefit of, or in connection with, the activities and services of the Forest Service of the Department of Agriculture;
  - (2) undertake and conduct activities that further the purposes for which units of the National Forest System are established and are administered and that are consistent with approved forest plans; and
  - (3) undertake, conduct and encourage educational, technical and other assistance, and other activities that support the multiple use, research, cooperative forestry and other programs administered by the Forest Service.
- (c) LIMITATION AND CONFLICTS OF INTERESTS-
  - (1) The Foundation shall not participate or intervene in a political campaign on behalf of any candidate or public office.
  - (2) No director, officer, or employee of the Foundation shall participate, directly or indirectly, in the consideration or determination of any question before the Foundation affecting-
    - (A) the financial interests of the director, officer, or employee, or
    - (B) the interests of any corporation partnership, entity, or organization in which such director, officer, or employee-
      - (i) is an officer, director, or trustee; or
      - (ii) has any direct or indirect financial interest

## SEC. 403. BOARD OF DIRECTORS OF THE FOUNDATION. 16 USC 583j-1.

- (a) ESTABLISHMENT AND MEMBERSHIP.-The Foundation shall have a governing Board of Directors (hereinafter referred to as the “Board”), which shall consist of fifteen Directors, each of whom shall be a United States citizen. At all times, a majority of members of the Board shall be educated or have actual experience in natural or cultural resource management, law, or research.

To the extent practicable, members of the Board shall represent diverse points of view relating to natural and cultural resource issues. The Chief of the Forest Service shall be an ex officio nonvoting member of the Board.

- (b) **APPOINTMENT AND TERMS.**-Within one year from the date of enactment of this title, the Secretary of Agriculture (hereinafter referred to as the “Secretary”) shall appoint the Directors of the Board. Directors shall be appointed for terms of six years; except that the Secretary, in making the initial appointments to the Board, shall appoint one-third each of the Directors to terms of two, four, and six years respectively. A vacancy on the Board shall be filled within sixty days of such vacancy in the manner of which the original appointment was made. No individual may serve more than twelve consecutive years as a Director.
- (c) **CHAIRMAN.**-The Chairman shall be elected by the Board from its members. A chairman shall serve for a two-year term, and may be re-elected to the post during his tenure as a Director.
- (d) **QUORUM.**-A majority of the current voting membership of the Board shall constitute a quorum for the transaction of business.
- (e) **MEETINGS.**-The Board shall meet at the call of the Chairman at least once a year. If a Director misses three consecutive regularly scheduled meetings, that individual may be removed from the Board by majority vote of the Board of Directors and that vacancy filled in accordance with subsection (b) of this section.
- (f) **REIMBURSEMENT OF EXPENSES.**-Voting members of the Board shall serve without pay, but may be reimbursed for the actual and necessary traveling and subsistence expenses incurred by them in the performance of their duties for the Foundation. Such reimbursement may not exceed such amount as would be authorized under section 5703 of title 5, United States Code, for the payment of expenses and allowances for individuals employed intermittently in the Federal Government service.
- (g) **GENERAL POWERS.**-The Board may complete the organization of the Foundation by appointing employees, adopting a constitution and bylaws consistent with the purposes of the Foundation and the provisions of this subtitle, and undertaking other such acts as may be necessary to function and to carry out the provisions of this title.
- (h) **OFFICERS AND EMPLOYEES.**-Officers and employees may not be appointed until the Foundation has sufficient funds to pay their services. Officers and employees of the Foundation shall be appointed without regard to the provisions of title 5, United States Code, governing appointment in the competitive service, and may be paid without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates.

## **SEC. 404. CORPORATE POWERS AND OBLIGATIONS. 16 USC 583j-2.**

- (i) **IN GENERAL.**-The Foundation-
  - a. shall have perpetual succession;
  - b. may conduct business throughout the several States, territories, and possessions of the United States and in foreign countries;
  - c. shall have its principal offices in the Washington, D.C. metropolitan area; and
  - d. shall at all times maintain a designated agent in the District of Columbia authorized to accept services of process for the Foundation.
- (j) **NOTICE AND SERVICE OF PROCESS.**-The serving of notice to, or service of process upon, the agent required under this paragraph, or mailed to the business address of such agent, shall be deemed as service upon or notice to the Foundation.
- (k) **SEAL.**-The Foundation shall have an official seal selected by the Board which shall be judicially noticed.
- (l) **POWERS.**-To carry out its purposes, the Foundation shall have, in addition to powers otherwise authorized under this title, the usual powers of a corporation in the District of Columbia, including the power to-
  - a. accept, receive, solicit, hold, administer and use any gift, devise, or bequest, either absolutely or in trust, or real or personal property or any income therefrom or other interest therein;
  - b. acquire by donation, gift, devise, purchase or exchange any real or personal property or interest therein;
  - c. unless otherwise required by the instrument of transfer, sell, donate, lease, invest, reinvest, retain or otherwise dispose of any property or income therefrom;
  - d. borrow money and issue bonds, debentures, or other debt instruments;
  - e. sue and be sued, and complain and defend itself in any court of competent jurisdiction (except that the Directors of the Board shall not be personally liable, except for gross negligence);
  - f. enter into contracts or other arrangements with public agencies, private organizations, and persons and to make such payments as may be necessary to carry out the purposes thereof; and
  - g. do any and all acts necessary and proper to carry out the purposes of the Foundation.
- (m) **PROPERTY.**-(1) The Foundation may acquire, hold and dispose of lands, waters, or other interests in real property by donation, gift, devise, purchase or exchange. For the purposes of this title, an interest in real property shall include, but not be limited to, mineral and water rights, rights of way, and easements, appurtenant or in gross. A gift, devise, or bequest may be accepted by the Foundation even though it is encumbered, restricted, or subject to beneficial interests of private persons if any current or future interest therein is for the benefit of the Foundation.

- (2) No lands or waters, or interest therein, that are owned by the Foundation and are determined by the Chief of the United States Forest Service to be valuable for purposes established in this title shall be subject to condemnation by any State or political subdivision, or any agent of instrumentality thereof.
- (3) The Foundation and any income or property received or owned by it, and all transactions relating to such income or property, shall be exempt from all Federal, State, and local taxation with respect thereto.
- (4) Contributions, gifts, and other transfers made to or for the use of the Foundation shall be treated as contributions, gifts, or transfers to an organization exempt from taxation under section 501(c)(3) of the Internal Revenue Code of 1986.

### **SEC. 405. ADMINISTRATIVE SERVICES AND SUPPORT. 16 USC 583j-3.**

- (n) **STARTUP FUNDS.**-For the purposes of assisting the Foundation in establishing an office and meeting initial administrative, project, and other startup expenses, the Secretary is authorized to provide to the Foundation \$500,000, from funds appropriated pursuant to section 410(a), per year for the two years beginning October 1, 1992. Such funds shall remain available to the Foundation until they are expended for authorized purposes.
- (o) **MATCHING FUNDS.**-In addition to the startup funds provided under subsection (a) of this section, for a period of five years beginning October 1, 1992, the Secretary is authorized to provide matching funds for administrative and project expenses incurred by the Foundation as authorized by section 410(b) of this title including reimbursement of expenses under section 403, not to exceed the current Federal Government per diem rates.
- (p) **ADMINISTRATIVE EXPENSES.**-At any time, the Secretary may provide the Foundation use of the Department of Agriculture personnel, facilities, and equipment, with partial or no reimbursement, with such limitation and on such terms and conditions as the Secretary shall establish.

### **SEC. 406. VOLUNTEERS. 16 USC 583j-4.**

The Secretary may accept, without regard to the civil service classification laws, rules, and regulations, any director, officer, employee or agent of the Foundation as a volunteer for purposes of the Volunteers in the National Forests Act of 1972 (16 U.S.C. 558a through 558d, 86 Stat. 147).

## **SEC. 407. AUDITS AND REPORT REQUIREMENTS. 16 USC 583j-5.**

- (q) AUDITS.-For the purposes of the act entitled “An Act for audit of accounts of private corporations established under Federal law,” approved August 30, 1964 (36 U.S.C. 1101 through 1103; Public Law 88-504) the Foundation shall be treated as a private corporation established under Federal law.
- (r) ANNUAL REPORTS.-The Foundation shall, transmit each year to Congress a report of its proceedings and activities of the previous year, including a full and complete statement of its receipts, expenditures, and investments.

## **SEC. 408. UNITED STATES RELEASE FROM LIABILITY. 16 USC 583j-6.**

The United States shall not be liable for any debts, defaults, acts of omissions of the Foundation nor shall the full faith and credit of the United States extend to any obligations of the Foundations.

## **SEC. 409. ACTIVITIES OF THE FOUNDATION AND UNITED STATES FOREST SERVICE. 16 USC 583j-7.**

The activities of the Foundation authorized under the provisions of this Act shall be supplemental to and shall not preempt any authority or responsibility of the United States Forest Service under any other provision of law.

## **SEC. 410. AUTHORIZATION OF APPROPRIATIONS. 16 USC 583j-8.**

- (a) START-UP FUNDS.-For the purposes of section 405 of this title, there are authorized to be appropriated \$1,000,000.
- (b) MATCHING FUNDS.-For the purposes of section 405 of this title, during the five-year period beginning October 1, 1992, there are authorized to be appropriated \$1,000,000 annually to the Secretary of Agriculture to be made available to the Foundation to match, on a one-for-one basis, private contributions made to the Foundation.

Approved November 16, 1990.

Amended October 12, 1993.



**CHALLENGE COST SHARE SUPPLEMENTAL PROJECT AGREEMENT  
21-CS-11031200-090**

To

MASTER CHALLENGE COST SHARE AGREEMENT 19-CS-11031600-056

Between

THE NATIONAL FOREST FOUNDATION

And The

USDA, FOREST SERVICE  
TONTO NATIONAL FOREST

This Supplemental Project Agreement (SPA) is hereby made and entered into by and between the National Forest Foundation, hereinafter referred to as "NFF," and the USDA, Forest Service, USDA, Forest Service, Tonto National Forest hereinafter referred to as the "U.S. Forest Service," as specified under the provisions of Master Agreement 19-CS-11031600-056.

Title: Highline Trail Improvement Project

**I. GENERAL PROJECT DESCRIPTION:** NFF and the U.S Forest Service will partner together to address deferred maintenance needs and complete several improvements on the Highline Trail No. 31. The Highline Trail traverses more than 50 miles on the Payson Ranger District of the Tonto National Forest and overlaps with the Arizona National Scenic Trail for more than 17 miles. It is a historic trail that receives moderate to heavy use for non-motorized traffic, including hikers, bikers and horseback riders. Because of its long contouring along a steep escarpment below the Mogollon Rim, the trail crosses numerous drainages that have caused erosion are unsafe trail conditions in many locations and requires restoration, maintenance, or full trail realignments. NFF has the ability to enhance and expand capacity through their unique resources, nationwide capacity, partner coordination, and restoration expertise. Specifically, NFF and the U.S. Forest Service will work collaboratively to accomplish restoration and/or stewardship projects to address Highline Trail maintenance or improvement needs to conform with Trail Management Objectives, improve watershed health and water quality, and increase user safety.

**II. RESPONSIBILITIES:**

A. The NFF shall:

1. Perform in accordance with the Scope of Work (Attachment A) and associated Financial Plan (Attachment B).
2. Develop partnerships with third parties to receive and manage funds so that those parties may support trail maintenance and improvement needs on the Tonto National Forest.
3. Coordinate with the Tonto National Forest, non-profit partners and third-party contractors to plan, implement, monitor, compile, and report on-the-ground accomplishments.



B. The U.S. Forest Service shall:

1. PAYMENT/REIMBURSEMENT. The U.S. Forest Service shall reimburse the NFF for the U.S. Forest Service's share of actual expenses incurred, not to exceed **\$42,000.00**, as shown in the Financial Plan. In order to approve a Request for Reimbursement, the U.S. Forest Service shall review such requests to ensure payments for reimbursement are in compliance and otherwise consistent with the terms of the agreement. The U.S. Forest Service shall make payment upon receipt of the NFF's quarterly invoice. Each invoice from the NFF must display the total project costs for the billing period, separated by U.S. Forest Service and the NFF's share. In-kind contributions must be displayed as a separate line item and must not be included in the total project costs available for reimbursement. The final invoice must display the NFF's full match towards the project, as shown in the financial plan, and be submitted no later than 90 days from the expiration date.

Each invoice must include, at a minimum:

- 1) The NFF's name, address, and telephone number
- 2) U.S. Forest Service agreement number
- 3) Invoice date
- 4) Performance dates of the work completed (start & end)
- 5) Total invoice amount for the billing period, separated by U.S. Forest Service and NFF share with in-kind contributions displayed as a separate line item.
- 6) Display all costs, both cumulative and for the billing period, by separate cost elements as shown on the financial plan.
- 7) Cumulative amount of U.S. Forest Service payments to date.
- 8) Statement that the invoice is a request for payment by 'reimbursement'
- 9) If using SF-270, a signature is required.
- 10) Invoice Number, if applicable

The invoice shall be forwarded:

EMAIL: [SM.FS.ASC\\_GA@USDA.GOV](mailto:SM.FS.ASC_GA@USDA.GOV)

FAX: 877-687-4894

POSTAL: USDA Forest Service  
Albuquerque Service Center  
Payments – Grants & Agreements  
101B Sun Ave NE  
Albuquerque, NM 87109

A copy must be sent to:

Angie Abel  
[Angela.Abel@usda.gov](mailto:Angela.Abel@usda.gov)



- 2. **LIMITATION OF FUNDS.** U.S. Forest Service funds in the amount of **\$42,000.00** are currently available for performance of this agreement through **January 8, 2023**. The U.S. Forest Service’s ability to provide additional funding is contingent upon the availability of appropriated funds from which payment can be made. There is no legal liability on the part of the U.S. Forest Service for any payment above this amount until NFF receives notice of availability confirmed in a written modification by the U.S. Forest Service.
  
- 3. **TEXT MESSAGING WHILE DRIVING.** In accordance with Executive Order (EO) 13513, “Federal Leadership on Reducing Text Messaging While Driving,” any and all text messaging by Federal employees is banned: a) while driving a Government owned vehicle (GOV) or driving a privately owned vehicle (POV) while on official Government business; or b) using any electronic equipment supplied by the Government when driving any vehicle at any time. All Cooperatives, their Employees, Volunteers, and Contractors are encouraged to adopt and enforce policies that ban text messaging when driving company owned, leased or rented vehicles, POVs or GOVs when driving while on official Government business or when performing any work for or on behalf of the Government.

**III. CONTACTS & TIME LIMITS:**

- A. **PRINCIPAL CONTACTS.** Individuals listed below are authorized to act in their respective areas for matters related to this agreement.

**Principal Cooperator Contacts:**

<b>Cooperator Program Contact</b>	<b>Cooperator Administrative Contact</b>
Name: Rebecca Davidson Address: 7324 E. Sixth Avenue City, State, Zip: Scottsdale, AZ 85251 Telephone: 720-749-9008 Email: <a href="mailto:rdavidson@nationalforests.org">rdavidson@nationalforests.org</a>	Name: Sheree Bombard Address: Bldg 27, Swte 3 Fort Missoula Rd City, State, Zip: Missoula, MT 59804 Telephone: 406-830-3359 Email: <a href="mailto:payables@nationalforests.org">payables@nationalforests.org</a>

**Principal U.S. Forest Service Contacts:**

<b>U.S. Forest Service Program Manager Contact</b>	<b>U.S. Forest Service Administrative Contact</b>
Name: Angie Abel Address: 1009 E. Highway 260 City, State, Zip: Payson, AZ 85541 Telephone: (928) 474-7920 FAX: (928) 474-7900 Email: <a href="mailto:Angela.Abel@usda.gov">Angela.Abel@usda.gov</a>	Name: Matt Quinn Address: 2324 E McDowell Rd City, State, Zip: Phoenix, AZ 85006 Telephone: 602-225-5200 FAX: Email: <a href="mailto:matthew.quinn@usda.gov">matthew.quinn@usda.gov</a>




- B. ASSURANCE REGARDING FELONY CONVICTION OR TAX DELINQUENT STATUS FOR CORPORATE ENTITIES. This agreement is subject to the provisions contained in the Department of Interior, Environment, and Related Agencies Appropriations Act, 2012, P.L. No. 112-74, Division E, Section 433 and 434 as continued by Consolidated and Further Continuing Appropriations Act, 2013, P.L. No. 113-6, Division F, Title I, Section 1101(a)(3) regarding corporate felony convictions and corporate federal tax delinquencies. Accordingly, by entering into this agreement NFF acknowledges that it: 1) does not have a tax delinquency, meaning that it is not subject to any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, and (2) has not been convicted (or had an officer or agent acting on its behalf convicted) of a felony criminal violation under any Federal law within 24 months preceding the agreement, unless a suspending and debarring official of the United States Department of Agriculture has considered suspension or debarment is not necessary to protect the interests of the Government. If NFF fails to comply with these provisions, the U.S. Forest Service will annul this agreement and may recover any funds NFF has expended in violation of sections 433 and 434.
- C. COMMENCEMENT/EXPIRATION DATE. This agreement is executed as of the date of the last signature and is effective through **January 8, 2023**, at which time it will expire. The expiration is the final date for completion for all work activities under this agreement.
- D. SYSTEM FOR AWARD MANAGEMENT REGISTRATION REQUIREMENT (SAM). NFF shall maintain current information in the System for Award Management (SAM) until receipt of final payment. This requires review and update to the information at least annually after the initial registration, and more frequently if required by changes in information or agreement term(s). For purposes of this agreement, System for Award Management (SAM) means the Federal repository into which an entity must provide information required for the conduct of business as a Cooperative. Additional information about registration procedures may be found at the SAM Internet site at [www.sam.gov](http://www.sam.gov).
- E. AVAILABILITY FOR CONSULTATION. Both parties will make themselves available at mutually agreeable times, for continuing consultation to discuss the conditions covered by this agreement and agree to actions essential to fulfill its purposes.

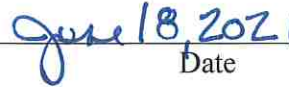
#### IV. APPROVAL

- A. AUTHORIZED REPRESENTATIVES. By signature below, each party certifies that the individuals listed in this document as representatives of the individual parties are



authorized to act in their respective areas for matters related to this agreement. In witness whereof, the parties hereto have executed this agreement as of the last date written below.

  
\_\_\_\_\_  
MARY MITSOS, President  
National Forest Foundation

  
\_\_\_\_\_  
Date

\_\_\_\_\_  
NEIL BOSWORTH, Forest Supervisor  
U.S. Forest Service, Tonto National Forest

\_\_\_\_\_  
Date

The authority and format of this agreement have been reviewed and approved for signature.

**BYRON KEELY** Digitally signed by BYRON KEELY  
Date: 2021.06.09 07:13:02 -06'00'

\_\_\_\_\_  
BYRON KEELY  
U.S. Forest Service Grants Management Specialist

\_\_\_\_\_  
Date

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Attachment A  
**Scope of Work for 21-CS-11031600-090**  
SPA to 19-CS-11031600-056  
**Highline Trail Improvement Project**

## **PROJECT OVERVIEW**

The Highline Trail traverses more than 50 scenic miles of open vistas through brushy hills of Manzanita and stands of Ponderosa Pine just below the Mogollon Rim, a steep escarpment defining the southwestern ridge of the Colorado Plateau. The historic route was cut in the late 1800s as a travel corridor to connect homesteads and communities around the towns of Payson and Pine, a 60 to 90-minute drive from the Phoenix metro area. It was designated as a National Recreation Trail in 1978 and shares 17 miles with the Arizona National Scenic Trail (AZNST).

Because of its idyllic contouring along the Mogollon Rim, it travels through every single canyon or drainage that comes off the Rim, of which there are many. In many cases, these crossings occur on the fall line of steep slopes, creating erosion and ruts where several major re-routes are required to create a more sustainable tread. Several fires in recent years have caused further damage to the trails, and many sections of trail need heavy maintenance. The Tonto National Forest and National Forest Foundation are collaborating on the Highline Trail Improvement Project to address these needs and ensure the Highline Trail continues to provide a high-value, sustainable recreation opportunity for non-motorized users. The goals of this project are to:

- Provide a single-lane, non-motorized trail that can accommodate moderate to heavy use for hikers, bikers and horseback riders with intermediate skill level and experience
- Slow and prevent erosion
- Improve watershed health and water quality
- Increase user safety
- Reduce deferred maintenance and long-term maintenance requirements

The full scope of improvements on the 52-mile trail may span up to ten years and have been split into multiple phases. This scope of work comprises Phase One of the project, approximately 17 miles of trail between Pine Trailhead and Washington Park Trailhead. It includes:

- Estimate addressing deferred maintenance needs on approximately five miles of trail
- Estimate 10 miles of new trail construction to realign eroding trails onto sustainable grades
- Estimate decommission and Rehabilitation of approximately 8.5 miles of unsustainable trail
- Estimate 4 trail bridges that will allow non-motorized traffic to cross streams and drainages while protecting riparian and aquatic resources

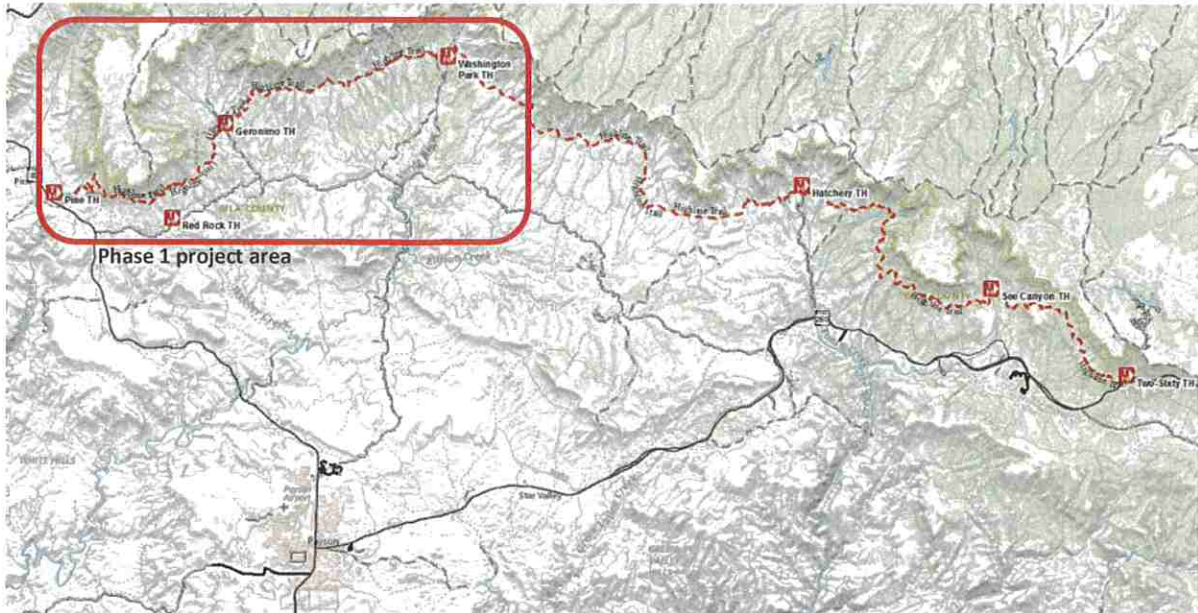


Figure 1: Overview of the 52-mile Highline Trail north of Payson and just below the Mogollon Rim. Phase one of the project includes 17 miles of trail and is enclosed in the red box in this map.

## PROJECT TASKS

Phase One of the project has been organized into six project tasks:

1. Trail Maintenance from Washington Park TH to Bray Creek
2. Trail Reroutes from Washington Park TH to Bray Creek
3. Trail Decommissioning from Washington Park TH to Bray Creek
4. Trail Reroutes from Pine TH to Bray Creek
5. Trail Decommissioning from Pine TH to Bray Creek
6. Installation of four pedestrian trail bridges between Geronimo TH and Washington Park TH

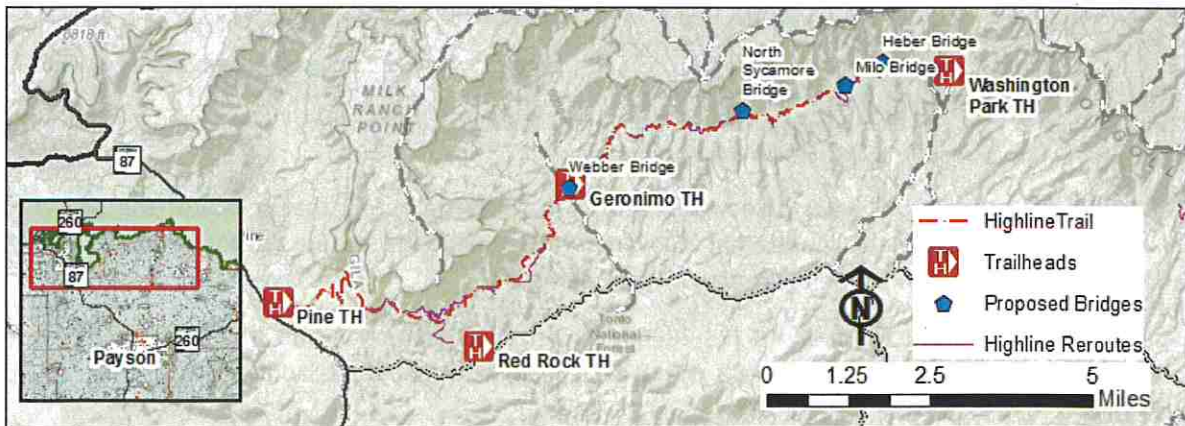


Figure 2: Phase One project area includes 17 miles of the Highline Trail between Pine TH and Washington Park TH.

## Task 1: Trail Maintenance from Washington Park TH to Bray Creek

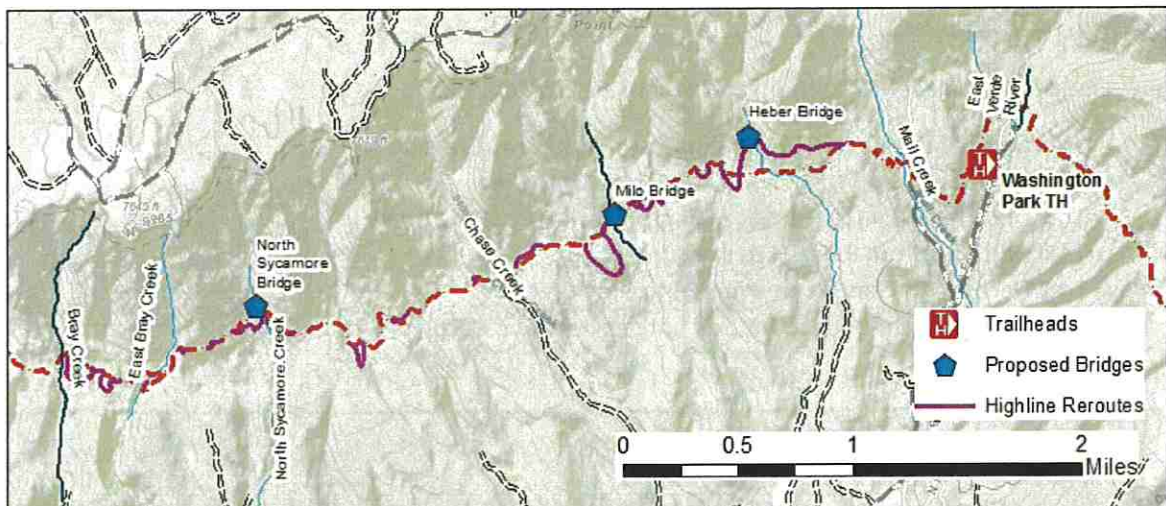
**Overview:** Complete trail maintenance using a combination of hand and power tools. Specific tasks may include brushing trail corridor, installing or cleaning out drains, check dam and water bar repair or installation, switchback repair or other tread work, sign maintenance and installation, and other trail maintenance activities.

**Deliverables:** Perform deferred and routine maintenance on approximately 5 miles of trail.

**Specifications:** All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007). Trails will be maintained as Class 3 trails with a designed use for pack and Saddle. See *Appendix A: Trail Design Parameters*.

## Task 2: Trail Reroutes from Washington Park TH to Bray Creek

**Overview:** Realign sections of trail between Washington Park TH and Bray Creek that have uncontrollable erosion, contain non-navigable obstacles, or are otherwise unsustainable. Surveyed routes that follow natural openings and contours have been previously identified and should be followed as closely as possible. In addition to mechanized or non-mechanized hand tools, realignments may be constructed with machinery such as mini skid steers, mini dozers, or mini excavators.



**Figure 3:** Phase one project from Washington Park to Bray Creek includes trail maintenance of existing trail, 3.5 miles of trail realignment, decommissioning of old trail, and 3 bridge installations.

**Deliverables:** Estimate 3.5 miles of newly constructed single-track trail that relocates the previously existing trail on to sustainable grades that follow natural openings and feature erosion control measures, such as rolling grade dips, grade reversals, or check dams.

**Specifications:** All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007). Trails will be built as Class 3 trails with a designed use for pack and Saddle. See *Appendix A: Trail Design Parameters*.

### Task 3: Trail Decommissioning from Washington Park TH to Bray Creek

**Overview:** Following the construction of trail realignments, the abandoned trail prism will be decommissioned and rehabilitated to reduce erosion potential and lasting impacts to watersheds. Compacted tread will be broken up and/or scarified by hand where necessary to allow native grasses, plants, and seed to take hold and grow. Native seed mix will be used to help augment revegetation. If rills have formed within the existing trail bed, small one rock structures or Zuni bowls will be installed to arrest erosion. Not all segments of trail require the same level of rehabilitation, but all entry points of decommissioned trails will be blocked using downed material or nearby boulders to eliminate foot traffic.

**Deliverables:** Estimate 3 miles of existing trail will be blocked at entry points using native materials and/or rehabilitated.

**Specifications:** All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007).



**Figure 4:** Example of a section of trail that will be abandoned and will need to be rehabilitated using rock structures to arrest erosion, or similar techniques for improving watershed health.



**Figure 5:** Riff and erosion such as this is not uncommon on sections of trail will be decommissioned and rehabilitated.

### Task 4: Trail Reroutes from Pine TH to Bray Creek

**Overview:** Realign sections of trail between Pine TH and Bray Creek that have uncontrollable erosion, contain non-navigable obstacles, or are otherwise unsustainable. Surveyed routes that follow natural openings and contours have been previously identified and should be followed as closely as possible. In

addition to mechanized or non-mechanized hand tools, realignments may be constructed with machinery such as mini skid steers, mini dozers, or mini excavators.

**Deliverables:** Estimate 6.6 miles of newly constructed single-track trail that relocates the previously existing trail on to sustainable grades that follow natural openings and feature erosion control measures, such as rolling grade dips, grade reversals, or check dams.

**Specifications:** All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007). Trails will be built as Class 3 trails with a designed use for pack and Saddle. See *Appendix A: Trail Design Parameters*.

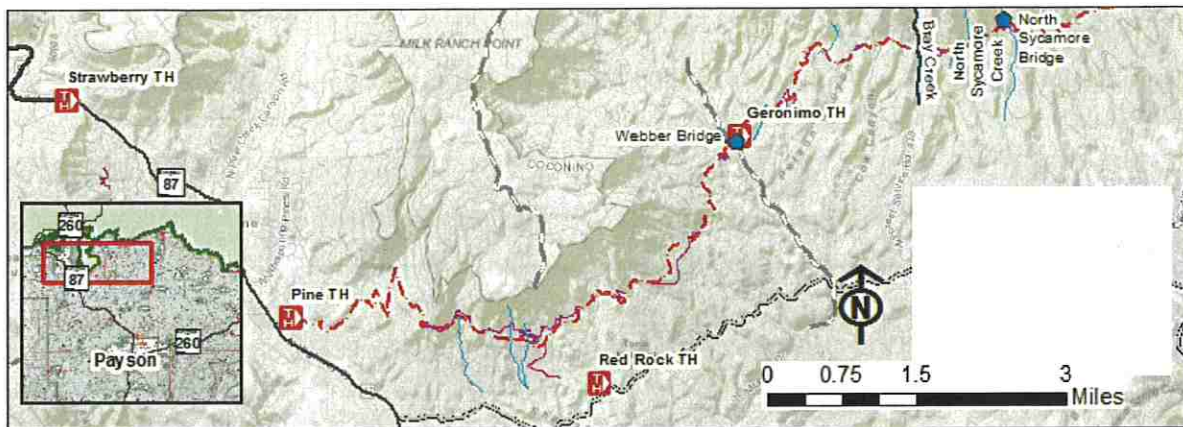


Figure 6: Western portion of Phase One project area from Pine TH to Bray Creek

### Task 5: Trail Decommissioning from Pine TH to Sycamore Creek

**Overview:** Following the construction of trail realignments, the abandoned trail prism will be decommissioned and rehabilitated to reduce erosion potential and lasting impacts to watersheds. Compacted tread will be broken up and/or scarified by hand where necessary to allow native grasses, plants, and seed to take hold and grow. Native seed mix will be used to help augment revegetation. If rills have formed within the existing trail bed, small one rock structures or Zuni bowls will be installed to arrest erosion. Not all segments of trail require the same level of rehabilitation, but all entry points of decommissioned trails will be blocked using downed material or nearby boulders to eliminate foot traffic.

**Deliverables:** Estimate 3 miles of existing trail will be blocked at entry points using native materials and/or rehabilitated.

**Specifications:** All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007).

### Task 6: Installation of 4 trail bridges between Geronimo TH and Washington Park TH

**Overview:** Four pedestrian bridges will be constructed where the Highline Trail cross Webber Creek, North Sycamore Creek, and two unnamed tributaries to Chase Creek. These bridge locations will prevent erosion of stream banks at stream crossings and provide access during periods of higher flow. Two of the bridges (Webber and North Sycamore) will be installed on existing trail, and two bridges (spanning the unnamed tributaries to Chase Creek) will be on newly constructed trails completed in Task 2: Trail Reroutes from Washington Park TH to Bray Creek.

**Deliverables:** Four permanent trail bridges designed to provide safe passage for visitors while protecting riparian and aquatic resources.

**Specifications:** Bridge design elements will include an open bottom and free span structure that requires no mid-span piers allowing for free upstream and downstream passage for aquatic species. Bridges will be designed to minimize their size and complexity. Crossing width and span will accommodate transport of large woody material. Bridge weight capacity should be great enough to support horseback riders but does not necessarily need to be engineered to support off-road vehicles such as ATVs or UTVs.



*Figure 7: First unnamed tributary of Chase Creek and site of one bridge installation*



*Figure 8: Second unnamed tributary of Chase Creek and site of bridge installation*

## PROJECT DESIGN

All project planning will follow the FSH 2309.18 – Trails Management Handbook, which defines five trail fundamentals or concepts that are to be used as the cornerstones of Forest Service trail management, including Trail Type, Trail Class, Managed Use, Designed Use and Design Parameters. For this project, the five trail fundamentals are outlined below.

### Trail Type

Trail type is the category that reflects the predominant trail surface and general mode of travel accommodated by a trail. This project will be a **standard terra trail** surface consisting predominantly of the ground

## Trail Class

The Trail Class is the prescribed scale of development for a trail, representing its intended design and management standards. Trail Classes are general categories reflecting trail development scale, arranged along a continuum. There are five Trail Classes, ranging from the least developed (Trail Class 1) to the most developed (Trail Class 5). All trail in this project will be designed and managed as **Trail Class 3 (Developed)**.

**Table 1:** Trail Classes are general categories reflecting trail development scale, arranged along a continuum. The Trail Class identified for a National Forest System (NFS) trail prescribes its development scale, representing its intended design and management standards.

Considerations and Attributes for Trail Class 3 (Developed)			
Trail Management	Tread & Traffic Flow	Obstacles	Constructed Features & Trail Elements
Typically managed to accommodate: <ul style="list-style-type: none"> <li>• Moderate to heavy use</li> <li>• Users with intermediate skill level and experience</li> <li>• Users with minimal orienteering skills</li> <li>• Moderately easy travel by Managed Uses</li> </ul>	<ul style="list-style-type: none"> <li>• Tread continuous and obvious.</li> <li>• Single lane, with allowances constructed for passing where required by traffic volume in places where there is no reasonable opportunity to pass.</li> <li>• Native or imported materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Obstacles may be common, but not substantial or intended to provide challenge</li> <li>• Vegetation cleared outside of trailway</li> </ul>	<ul style="list-style-type: none"> <li>• Structures may be common and substantial; constructed of imported or native materials.</li> <li>• Natural or constructed fords.</li> <li>• Bridges as needed for resource protection and appropriate access.</li> </ul>

## Managed Use

Managed Uses are the modes of travel that are actively managed and appropriate on a trail, based on its design and management. The Managed Use for all trail in this project will be **Standard Terra Non-Motorized Uses**, including Hiker/Pedestrian, Bicycle, and Pack and Saddle.

## Designed Use

Designed Use is the Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable Trail Class, determines which Design Parameters apply to a trail. The Designed Use for all trail in this project will be **Pack and Saddle**.

## Design Parameters

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of a trail, based on its Designed Use and Trail Class. Design Parameters reflect the design objectives for NFS trails and determine the dominant physical criteria that most define their geometric shape. The Design Parameters for all trail in this project will follow the criteria for **Trail Class 3 and a Designed Use of Pack and Saddle**, as described in *Appendix A: Trail Design Parameters*

**Trail Construction Cost Breakdown:**

For this agreement \$20,000.00 will go to constructing an estimated 5000 feet of new trail segments.

The cooperator NFF will supply \$15,000 for constructing an estimated 3750 additional feet of new trail segments.

Estimated cost is \$4 per foot for licensed professional trail builder to operate their machine for constructing a Class 3 non-motorized trail following 0723-2806-MTDC Trail Construction and Maintenance Notebook.

Surveyed routes that follow natural openings and contours have been previously identified as reroutes. Work will include mechanized machine or non-mechanized hand tools, realignments may be constructed with machinery such as mini skid steers, mini dozers, or mini excavators. Estimate 3.5 miles of newly constructed single-track trail that relocates the previously existing trail on to sustainable grades that follow natural openings and feature erosion control measures, such as rolling grade dips, grade reversals, or check dams. All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007). Trails will be built as Class 3 trails with a designed use for pack and Saddle. See *Appendix A: Trail Design Parameters*.

\$20,000 divided by 4=5,000 feet of newly constructed trail

\$15,000 divided by 4=3,750 feet of newly constructed trail

**Trail Maintenance Cost Breakdown:**

For this agreement \$7211.00 will go to performing maintenance task on an estimated 3605 feet of existing trail.

Estimated cost is \$2 per foot for licensed professional trail builder to operate their machine for maintaining a Class 3 non-motorized trail following 0723-2806-MTDC Trail Construction and Maintenance Notebook.

Complete trail maintenance using a combination of hand and power tools. Specific tasks may include brushing trail corridor, installing or cleaning out drains, check dam and water bar repair or installation, switchback repair or other tread work, sign maintenance and installation, and other trail maintenance activities. All work will follow 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007). Trails will be maintained as Class 3 trails with a designed use for pack and Saddle. See *Appendix A: Trail Design Parameters*.

\$7,211 divided by 2=3,605 feet trail maintained to standard

**National Forest Foundation Director Responsibilities:**

Market the project proposal; compile, solicit, and administer the Request for proposals for all trail work; work with communication director to fund raise for the project; actively recruit new partners and volunteers; solicit and oversee several volunteer work days; oversee conformance with Trail Construction and Maintenance Notebook and FSH 2309.18 – Trails Management Handbook.



## Appendix A: Trail Design Parameters

*and Saddle* (FSH 2309.18, Section 23.12, Exhibit 01)

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent.<sup>1</sup> Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use PACK AND SADDLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
<b>Design Tread Width</b>	<b>Wilderness</b> (Single Lane)	Typically, not designed or actively managed for equestrians, although use may be allowed	12" – 18" May be up to 48" along steep side slopes 48" – 60" or greater along precipices	18" – 24" May be up to 48" along steep side slopes 48" – 60" or greater along precipices	24" May be up to 48" along steep side slopes 48" – 60" or greater along precipices	Typically, not designed or actively managed for equestrians, although use may be allowed
	<b>Non-Wilderness</b> (Single Lane)		12" – 24" May be up to 48" along steep side slopes 48" – 60" or greater along precipices	18" – 48" 48" – 60" or greater along precipices	24" – 96" 48" – 60" or greater along precipices	
	<b>Non-Wilderness</b> (Double Lane)		60"	60" – 84"	84" – 120"	
	<b>Structures</b> (Minimum Width)		Other than bridges: 36" Bridges without handrails: 60" Bridges with handrails: 84" clear width	Other than bridges: 36" Bridges without handrails: 60" Bridges with handrails: 84" clear width	Other than bridges: 36" Bridges without handrails: 60" Bridges with handrails: 84" clear width	
<b>Design Surface<sup>2</sup></b>	<b>Type</b>		Native, with limited grading May be frequently rough	Native, with some onsite borrow or imported material where needed for stabilization and occasional grading Intermittently rough	Native, with improved sections of borrow or imported material and routine grading Minor roughness	
	<b>Protrusions</b>		≤ 6" May be common and continuous	≤ 3" May be common, not continuous	≤ 3" Uncommon, not continuous	
	<b>Obstacles</b> (Maximum Height)		12"	6"	3"	
Designed Use PACK AND SADDLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5

<b>Design Grade<sup>2</sup></b>	<b>Target Grade</b>	Typically, not designed or actively managed for equestrians, although use may be allowed	5% – 20%	3% – 12%	2% – 10%	Typically, not designed or actively managed for equestrians, although use may be allowed
	<b>Short Pitch Maximum</b>		30%	20%	15%	
	<b>Maximum Pitch Density</b>		15% – 20% of trail	5% – 15% of trail	5% – 10% of trail	
<b>Design Cross Slope</b>	<b>Target Cross Slope</b>		5% – 10%	3% – 5%	0% – 5%	
	<b>Maximum Cross Slope</b>		10%	8%	5%	
<b>Design Clearing</b>	<b>Height</b>		8' – 10'	10'	10' – 12'	
	<b>Width</b>		72" Some light vegetation may encroach into clearing area	72" – 96"	96"	
	<b>Shoulder Clearance</b>		6" – 12" Pack clearance: 36" x 36"	12" – 18" Pack clearance: 36" x 36"	12" – 18" Pack clearance: 36" x 36"	
<b>Design Turn</b>	<b>Radius</b>		4' – 5'	5' – 8'	6' – 10'	

<sup>1</sup> For definitions of Design Parameter attributes (for example, Design Tread Width and Short Pitch Maximum) see FSH 2309.18, Section 05.

<sup>2</sup> The determination of trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Attachment:

USFS Agreement No.:   
Cooperator Agreement No.:

Mod. No.:

**Note: This Financial Plan may be used when:**  
**(1) No program income is expected and**  
**(2) The Cooperator is not giving cash to the FS and**  
**(3) There is no other Federal funding**

**Agreements Financial Plan (Short Form)**

**Financial Plan Matrix:** Note: All columns may not be used. Use depends on source and type of contribution(s).

COST ELEMENTS	FOREST SERVICE CONTRIBUTIONS		COOPERATOR CONTRIBUTIONS		(e) Total
	(a) Noncash	(b) Cash to Cooperator	(c) Noncash	(d) In-Kind	
Direct Costs					
Salaries/Labor	\$10,208.83	\$6,400.00	\$0.00	\$0.00	\$16,608.83
Travel	\$660.00	\$431.20	\$0.00	\$0.00	\$1,091.20
Equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Supplies/Materials	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Printing	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Other	\$0.00	\$27,211.00	\$15,000.00	\$0.00	\$42,211.00
Other					\$0.00
Subtotal	\$10,868.83	\$34,042.20	\$15,000.00	\$0.00	\$59,911.03
Coop Indirect Costs		\$7,957.80	\$0.00		\$7,957.80
FS Overhead Costs	\$1,304.26				\$1,304.26
Total	\$12,173.09	\$42,000.00	\$15,000.00	\$0.00	
<b>Total Project Value:</b>					\$69,173.09

Matching Costs Determination	
Total Forest Service Share = (a+b) ÷ (e) = (f)	(f) 78.32%
Total Cooperator Share (c+d) ÷ (e) = (g)	(g) 21.68%
Total (f+g) = (h)	(h) 100.00%

## WORKSHEET FOR

### FS Non-Cash Contribution Cost Analysis, Column (a)

Use this worksheet to perform the cost analysis that supports the lump sum figures provided in the matrix. NOTE: This worksheet auto populates the relevant and applicable matrix cells.

Cost element sections may be deleted or lines may be hidden, if not applicable. Line items may be added or deleted as needed. The Standard Calculation sections provide a standardized formula for determining a line item's cost, e.g. cost/day x # of days=total, where the total is calculated automatically. The Non-Standard Calculation sections provide a write-in area for line items that require a calculation formula that is other than the standardized formulas, e.g. instead of salaries being calculated by cost/day x # of days, costs may be calculated simply by a contracted value that is not dependent on days worked, such as 1 employee x \$1,200/contract= \$1,200. Be sure to review your calculations when entering in a Non-Standard Calculation, and provide a brief explanation of units used to make calculation, e.g. '1 month contract,' on a line below the figures.

Salaries/Labor					
Standard Calculation					
Job Description		Cost/Day	# of Days		Total
Forest Trails Program Coordinator		\$280.89	8.00		\$2,247.12
NZ Rec Staff		\$472.69	13.00		\$6,144.97
Forest Hydrologist		\$605.58	3.00		\$1,816.74
<b>Total Salaries/Labor</b>					<b>\$10,208.83</b>

Travel					
Standard Calculation					
Travel Expense		Cost/Mile	# of Miles		Total
4x4 mileage		\$0.28	2000.00		\$560.00
4x4 Pickup		\$10.00	10.00		\$100.00
Vehicle cost is \$310/Month. Cost calculated by daily rate for 10 days.					\$0.00
<b>Total Travel</b>					<b>\$660.00</b>

Equipment	
<b>Total Equipment</b>	<b>\$0.00</b>

Supplies/Materials	
<b>Total Supplies/Materials</b>	<b>\$0.00</b>

Printing	
<b>Total Printing</b>	<b>\$0.00</b>

Other Expenses	
<b>Total Other</b>	<b>\$0.00</b>

<b>Subtotal Direct Costs</b>	<b>\$10,868.83</b>
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Forest Service Overhead Costs			
Current Overhead Rate	Subtotal Direct Costs		Total
12.00%	\$10,868.83		\$1,304.26
<b>Total FS Overhead Costs</b>			<b>\$1,304.26</b>

<b>TOTAL COST</b>	<b>\$12,173.09</b>
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## WORKSHEET FOR

### FS Cash to the Cooperator Cost Analysis, Column (b)

Use this worksheet to perform the cost analysis that supports the lump sum figures provided in the matrix. NOTE: This worksheet auto populates the relevant and applicable matrix cells.

Cost element sections may be deleted or lines may be hidden, if not applicable. Line items may be added or deleted as needed. The Standard Calculation sections provide a standardized formula for determining a line item's cost, e.g. cost/day x # of days=total, where the total is calculated automatically. The Non-Standard Calculation sections provide a write-in area for line items that require a calculation formula that is other than the standardized formulas, e.g. instead of salaries being calculated by cost/day x # of days, costs may be calculated simply by a contracted value that is not dependent on days worked, such as 1 employee x \$1,200/contract= \$1,200. Be sure to review your calculations when entering in a Non-Standard Calculation, and provide a brief explanation of units used to make calculation, e.g. '1 month contract,' on a line below the figures.

Salaries/Labor				
Standard Calculation				
Job Description		Cost/Day	# of Days	Total
NFF Director		\$640.00	10.00	\$6,400.00
See SOW for involvement breakdown.				
<b>Total Salaries/Labor</b>				<b>\$6,400.00</b>

Travel				
Standard Calculation				
Travel Expense	RT Miles	Cost/Mile	# of Trips	Total
Mielage	154	\$0.56	5.00	\$431.20
Scottsdale to Payson				\$0.00
<b>Total Travel</b>				<b>\$431.20</b>

Other Expenses				
Standard Calculation				
Item		# of Feet	Cost/Foot	Total
Trail Construction		5000.00	\$4.00	\$20,000.00
Trail Maintenance (Contracted)		3605.50	\$2.00	\$7,211.00
<b>Total Other</b>				<b>\$27,211.00</b>

<b>Subtotal Direct Costs</b>	<b>\$34,042.20</b>
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Cooperator Indirect Costs				
Current Overhead Rate	Subtotal Direct Costs			Total
25.00%	\$31,831.20			\$7,957.80
25% of first 25,000 for contract (6831.20+25,000)				
<b>Total Coop. Indirect Costs</b>				<b>\$7,957.80</b>

<b>TOTAL COST</b>	<b>\$42,000.00</b>
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## WORKSHEET FOR

### Cooperator Non-Cash Contribution Cost Analysis, Column (c)

Use this worksheet to perform the cost analysis that supports the lump sum figures provided in the matrix.  
 NOTE: This worksheet auto populates the relevant and applicable matrix cells.

Cost element sections may be deleted or lines may be hidden, if not applicable. Line items may be added or deleted as needed. The Standard Calculation sections provide a standardized formula for determining a line item's cost, e.g. cost/day x # of days=total, where the total is calculated automatically. The Non-Standard Calculation sections provide a write-in area for line items that require a calculation formula that is other than the standardized formulas, e.g. instead of salaries being calculated by cost/day x # of days, costs may be calculated simply by a contracted value that is not dependent on days worked, such as 1 employee x \$1,200/contract=\$1,200. Be sure to review your calculations when entering in a Non-Standard Calculation, and provide a brief explanation of units used to make calculation, e.g. '1 month contract,' on a line below the figures.

<b>Salaries/Labor</b>	
Total Salaries/Labor	\$0.00

<b>Travel</b>	
Total Travel	\$0.00

<b>Equipment</b>	
Total Equipment	\$0.00

<b>Supplies/Materials</b>	
Total Supplies/Materials	\$0.00

<b>Printing</b>	
Total Printing	\$0.00

<b>Other Expenses</b>			
<b>Standard Calculation</b>			
Item	# of Feet	Cost/Foot	Total
Trail Construction (Contracted)	3750.00	\$4.00	\$15,000.00
Professional Trail Builder per 0723-2806-MTDC Trail Construction and Maintenance Notebook (see SOW)			
Total Other			\$15,000.00

<b>Subtotal Direct Costs</b>	<b>\$15,000.00</b>
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<b>Cooperator Indirect Costs</b>		
Current Overhead Rate	Subtotal Direct Costs	Total
	\$15,000.00	\$0.00
Total Coop. Indirect Costs		\$0.00

<b>TOTAL COST</b>	<b>\$15,000.00</b>
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**Record of Decision  
USDA Forest Service**

**Tonto National Forest  
Land and Resource Management Plan  
Final Environmental Impact Statement**

**Gila, Yavapai, Pinal, and Maricopa Counties, Arizona**

**I. INTRODUCTION**

This Record of Decision documents my decision approving a land and resource management plan for the Tonto National Forest for the next 10 to 15 years. The Plan will normally be revised every 10 years but must be reviewed at least every 15 years.

This Record of Decision also describes alternatives considered and provides rationale for the selected alternative. It also identifies the environmentally preferred alternative and the most economically efficient alternative. Mitigation and monitoring measures, implementation, and appeal rights are also described.

The Environmental Impact Statement discloses alternatives for land and resource management on the Tonto National Forest. The Environmental Impact Statement also describes the environment that will be affected and the potential environmental consequences of implementing the selected plan and the alternative plans.

**II. DECISION**

I have decided to approve implementation of Alternative 10 to guide the management of the Tonto National Forest for the next 10 to 15 years.

Under Alternative 10, the Tonto will be managed to increase grazing capacity above present levels along with reductions in permitted livestock use, as necessary to achieve proper management of the forage resource; to improve forest-wide watershed conditions; to provide a high quality wilderness recreation experience; to improve the developed recreation experience through construction of new developments, rehabilitation of existing sites, and capacity controls; to enhance dispersed recreation experience with better transportation access (roads and trails) and controlled off-road vehicle use; to promote conservation of State and Federal Threatened and Endangered species; to improve fish and wildlife habitats by balancing successional stages of vegetation through commercial timber sales, fuelwood harvest, prescribed burning, coordination with other resource activities, and direct habitat improvement; and to provide a balance between priced and nonpriced benefits within anticipated budget limitations.

This is a realistic approach to management of the Tonto National Forest since it ranks number one among the National Forests in the Nation for recreation (including wildlife and fish user days), and Phoenix is among the fastest growing cities in the Nation. Also, the majority of the public comments received on the Draft Environmental Impact Statement emphasized these resource areas. Revisions to Alternative 10 have been made based upon comments received. Alternative 10 provides for a rapid resolution (10-20 years) of the overgrazing problem, and corresponding improvement in watershed condition and riparian habitat.

The plan provides standards and guidelines for management of the land and resources on the forest, but does not address various administrative activities to carry on day-to-day internal operations. For example, personnel matters, fleet equipment, or internal organization changes are not covered in the plan.

**III. OTHER ALTERNATIVES CONSIDERED**

Other alternatives considered in detail were:

**Alternative 4 - No Action Alternative**

Alternative 4 projects current resource management. This is the No Action Alternative required by the National Environmental Policy Act regulations.

**Alternative 3**

Alternative 3 strives to meet Resource Planning Act objectives assigned by the Regional Guide.

**Alternative 1**

Alternative 1 emphasizes water yield in the Ponderosa pine and chaparral vegetative types.

**Alternative 2**

Alternative 2 emphasizes optimum watershed condition.

**Alternative 6**

Alternative 6 manages the forest at a low investment/low intensity level.

## Alternative 7

Alternative 7 emphasizes developed and dispersed recreation management forest-wide.

## Alternative 8

Alternative 8 emphasizes opportunity for hunting, fishing, and non-consumptive wildlife use and wildlife habitat management.

## Alternative 9

Alternative 9 emphasizes the production of forage, wood products, and developed recreation.

Additional descriptions of alternatives considered in detail are found in the Environmental Impact Statement, Chapter 2.

### Alternatives Considered, But Eliminated From Detailed Study

A number of alternatives were considered, but eliminated from detailed study in the Environmental Impact Statement. These alternatives were designed to estimate naturally occurring outputs and unavoidable costs of maintaining the forest as part of the National Forest System; and to maximize single resource outputs while maximizing present net value for timber, range permitted use, recreation, wildlife, water yield, and watershed condition.

Benchmark levels for wildlife, recreation, water yield, and watershed condition were considered in further detail as Forest Alternatives 8, 7, 1, and 2 respectively.

The reasons for eliminating alternatives from detailed study are discussed in Chapter 2 of the Environmental Impact Statement.

## IV. REASONS FOR DECISION

My decision is based on evaluation of the alternatives to determine which alternative maximizes net public benefits. Net public benefits are an expression of the overall long-term value to the Nation of all benefits less all costs whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index.

Net public benefits were determined by evaluating how well each alternative responded to issues, by weighing environmental consequences disclosed in the Environmental Impact Statement, by assessing budget requirements, and by considering public comments on the Draft Environmental Impact Statement and Proposed Plan.

Alternative 10 is selected because it provides the highest level of issue resolution and environmental protection within a realistic budget level and therefore maximizes net public benefits.

## Issue Resolution

Although all of the alternatives provide multiple use products and benefits while protecting or enhancing environmental quality, issues are treated differently in each alternative and each alternative resulted in varying degrees of issue resolution, quantifiable economic values, and net benefits.

Alternative 10 is equal or superior to all other alternatives in improvement of watershed condition; level of law enforcement; meeting projected dispersed recreation demand; rate of riparian improvement; providing high quality wilderness recreation in all wilderness; management of the transportation system; management of off-road vehicle use to minimize soil loss, maximize water quality and minimize resource conflicts, while providing ample opportunity for ORV use of trails and primitive roads; providing for mineral exploration and development in accordance with laws and regulations; and harvesting timber to provide the diversity of tree sizes and age classes needed for wildlife, sustained in stream flows, and positive visual attributes.

While not superior to other alternatives, alternative 10 is also highly responsive to water yield, fuelwood production, wildlife and fish recreation, and grazing issues. When compared to the alternative producing the highest level of issue resolution, alternative 10 produces 94 percent of the water yield produced in Alternative 1; 74 percent of the fuelwood produced in Alternative 3; and 89 percent of the wildlife and fish recreation produced in Alternative 8.

Alternative 10 achieves 92 percent of the forest's potential grazing use and resolves the overgrazing problem in 10-20 years. Only Alternative 2 resolves the overgrazing problem faster than Alternative 10. However, Alternative 2 only achieves 65 percent of the forest's grazing potential. Implementation of Alternative 2 would require a 39 percent reduction in grazing use. Major reductions over a short time period would cause a hardship for permittees dependent on National Forest permits for their forage. Studies by the Economic Research Service have shown that Tonto National Forest grazing permittees are dependent on Tonto permits for about 75 percent of their forage and on other National Forests for an additional 24 percent for a total dependency on National Forest forage of about 99 percent.

Also, large scale permit reductions in a short time period are not practical from an administrative standpoint. The cost and staffing required to develop sufficient detailed data to support contested adjustment actions exceeds reasonably expected funding. In addition, it is expected that some contested adjustments could be overturned through legal and political procedures and thereby slow progress presently being made on resolving the problem.

Although Alternative 2 balances permitted grazing capacity with use in 10 years, the rate of watershed condition improvement and riparian recovery does not exceed Alternative 10 because major stocking

adjustments in Alternative 10 also occur in the first 10 years and Alternative 10 maintains a much higher level of control of livestock movements. In other words, season long grazing is replaced with grazing systems which allow range rest and recovery. Alternative 2 takes approximately 20 years longer than Alternative 10 to achieve satisfactory watershed conditions forest wide.

The combination of reduction in permitted use along with capacity enhancement and improved management practices in Alternative 10 is the most reasonable approach to solving the overgrazing problem. Therefore, Alternative 10 is preferred.

Alternatives 3, 7, and 8 are also highly responsive to most issues. However, they produce 17 to 26 percent less permitted grazing use than Alternative 10, and balance capacity with use in 40-60 years, which was a primary concern expressed in public comment received on the Draft Environmental Impact Statement. All three alternatives provide a lower quality wilderness experience, and take approximately 20 years longer than Alternative 10 to achieve satisfactory watershed conditions forest wide. Alternatives 3 and 7 maintain a slower rate of riparian recovery, which was also a primary concern expressed in public comments received on the Draft Environmental Impact Statement. Alternatives 3 and 7 provide 12 and 57 percent higher outputs respectively in developed recreation visitor days. However, average annual budgets in the first period exceed realistic funding levels by \$3.6 million and \$14.9 million. Alternative 8 exceeds realistic funding levels by \$1.2 million annually. Most of this additional funding is tied to capital investments for recreational facilities and slightly higher operation and maintenance costs.

Alternative 10 requires an annual budget of \$8.7 million. With National priorities for reductions in government spending, the annual budget for Alternative 10 represents the upper limit for a budget that could realistically be expected.

#### **Economic Efficiency**

Alternative 10 ranks fifth in present net value (PNV) which is the primary economic criteria for comparing the alternatives. Alternatives having higher present net value were Alternatives 3, 1, 8, and 7 in descending order.

Alternative 3 has a higher PNV than Alternative 10 because it produces higher levels of timber harvest, developed recreation, and wildlife recreation.

Alternative 3 produces 18 million board feet of timber per year compared to 7.9 million board feet per year in Alternative 10. The average annual volume sold since 1974 has been 9.2 million board feet. The reduction in timber harvest in Alternative 10 is due to the limitation to maintain a realistic budget level and public sentiment opposing increased harvest levels.

Alternative 10 produces less developed recreation than Alternative 3 because the budget limitation in Alternative 10 prevents the major capital investments needed to meet developed recreation

demand. Less wildlife recreation is produced in Alternative 10 because of fewer acres of habitat improvement, particularly in the chaparral vegetative type.

Another reason Alternative 10 has a lower PNV than Alternative 3 is because Alternative 10 produces a higher quality wilderness experience, improved water quality, improved watershed conditions, improved management of the transportation system, and improved law enforcement which are nonpriced benefits that increase the cost of Alternative 10 and make it more attractive than Alternative 3 and the other alternatives with higher PNV.

Alternative 1 has a higher PNV than Alternative 10 because it produces higher levels of dispersed recreation managed at full service level increased water yield, and wildlife recreation. Alternative 1 yields more water because it is specifically designed to increase water yield. However, Alternative 10 is more attractive because it is superior to Alternative 1 in all issue areas except water yield and produces more nonpriced benefits.

Alternative 8 has a higher PNV than Alternative 10 primarily because it produces more dispersed recreation managed at full service level, wildlife recreation, and developed recreation opportunity. However, Alternative 10 is more attractive because it has a more realistic budget level, is superior in all issue areas except wildlife recreation, and produces more nonpriced benefits.

Alternative 7 has a PNV slightly higher than Alternative 10 because of increased developed recreation. While Alternative 7 fully meets projected demand for developed recreation, it requires a budget about three times larger than Alternative 10 which is unrealistic. Alternative 10 is also superior in responding to issues and production of nonpriced benefits. Therefore, Alternative 10 is preferred.

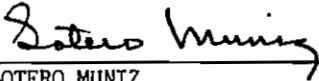
#### **Environmentally Preferred Alternative**

Alternative 10 is superior or equal to all other alternatives in terms of reduction in soil loss and achieving long term acres in satisfactory watershed condition. Alternative 10 also provides direct environmental benefits and/or mitigation measures in the areas of visual quality, soil and watershed protection, cultural resources, wildlife habitat, riparian recovery, vegetative diversity, water quality, and air quality. None of the other alternatives provide additional increments of environmental protection. Formal consultation, as required by the Endangered Species Act of 1973, with the Fish and Wildlife Service resulted in a favorable biological opinion for threatened and endangered species that may be affected by the proposed action.

Alternative 10 is the environmentally preferable alternative.

**IX. APPEAL RIGHTS**

This decision is subject to administrative review in accordance with the provisions of 36 CFR 211.18. Notice of appeal must be made in writing and submitted to Sotero Muniz, Regional Forester, Southwestern Region, USDA Forest Service, 517 Gold Avenue SW., Albuquerque, New Mexico 87102, within 45 days from the date of this decision. A statement of reasons to support the appeal and any request for oral presentation must be filed within the 45 day period for filing a notice of appeal.



SOTERO MUNIZ  
Regional Forester

\_\_\_\_\_  
Date

## Summary of Findings for Chase Creek Trail Bridge

Kelly Mott Lacroix, Forest Hydrologist

02/25/2022

**Purpose:** Determine bridge span to pass the 100 yr flood event on Chase Creek.

**Methods:** Using 4FRI LiDAR data together with multiple field visits to the site a HEC RAS model was created. This is an ungauged basin, therefore all flow volumes were estimated using the USGS StreamStats application. Simulations of inundation depth and extents were run for 2, 5, 10, 25, 50, and 100 year events. The watershed above the proposed bridge site is 0.49 square miles and has a mean elevation of 6858 feet. Flood volumes used in the model are displayed in Figure 1. The 100 yr event is estimated to produce 910 cfs.

Figure 1

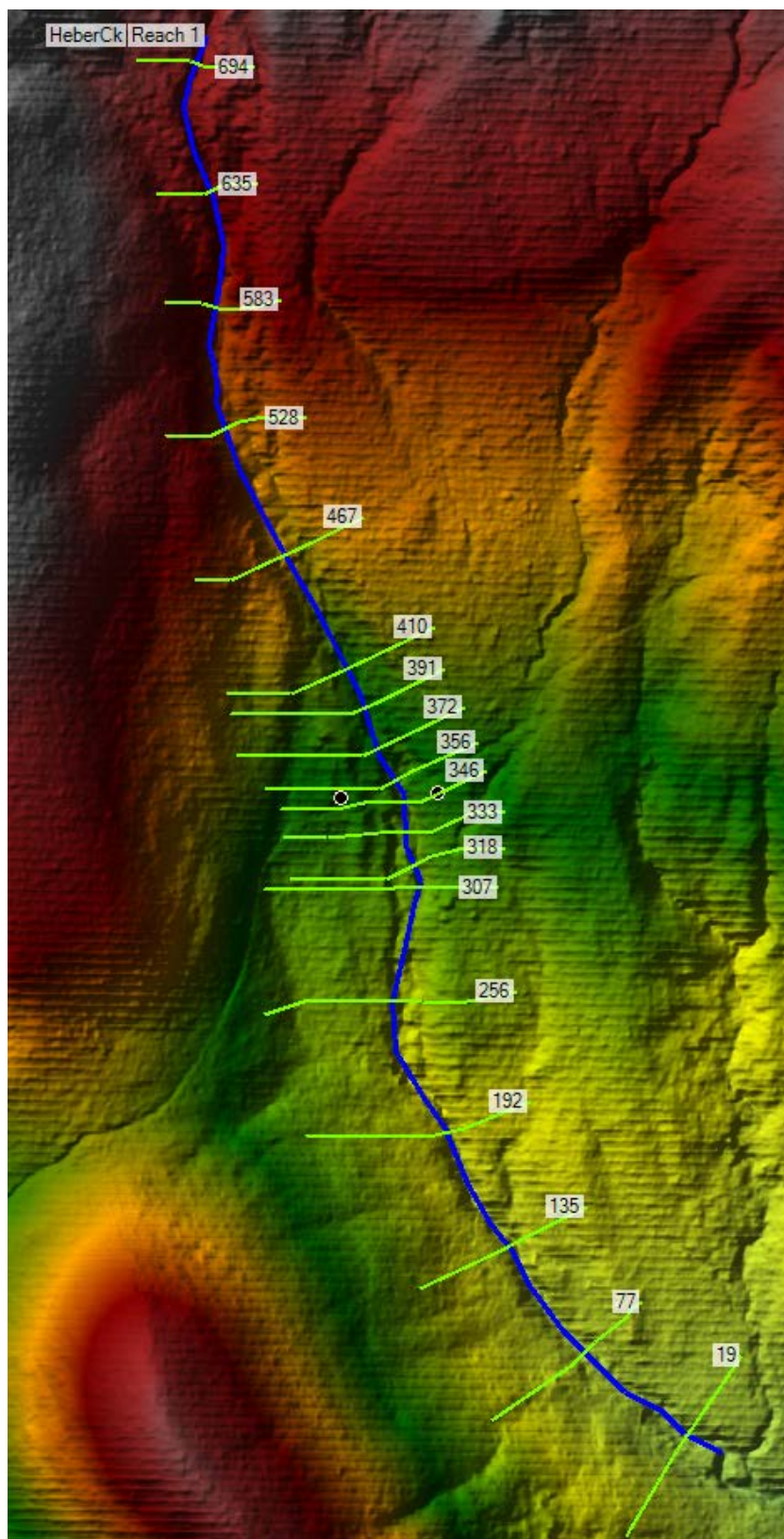
Statistic	Value	Unit
50-percent AEP flood	34.1	ft <sup>3</sup> /s
20-percent AEP flood	92.7	ft <sup>3</sup> /s
10-percent AEP flood	181	ft <sup>3</sup> /s
4-percent AEP flood	383	ft <sup>3</sup> /s
2-percent AEP flood	611	ft <sup>3</sup> /s
1-percent AEP flood	910	ft <sup>3</sup> /s
0.5-percent AEP flood	1270	ft <sup>3</sup> /s
0.2-percent AEP flood	1900	ft <sup>3</sup> /s

### Peak-Flow Statistics Citations

**Paretti, N.V., Kennedy, J.R., Turney, L.A., and Veilleux, A.G., 2014, Methods for estimating magnitude and frequency of floods in Arizona, developed with unregulated and rural peak-flow data through water year 2010: U.S. Geological Survey Scientific Investigations Report 2014-5211, 61 p., <http://dx.doi.org/10.3133/sir20145211>.**

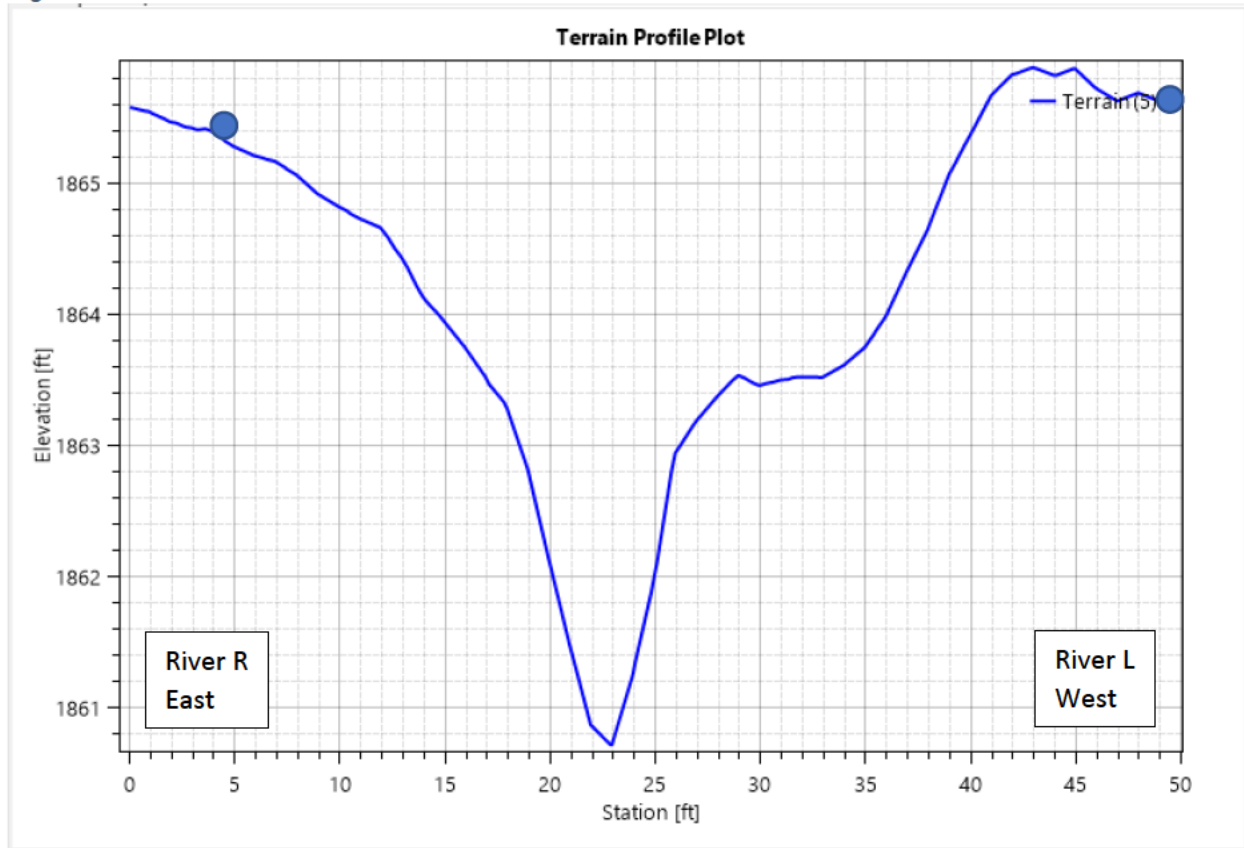
A river reach of 700 feet was delineated in HEC RAS mapper using 4FRI LiDAR data. Cross sections were set at 50 ft apart, except for near the proposed bridge, where the cross sections were set 15 feet apart. A total of 18 cross sections were used. The field determined location of the bridge is shown with black dots (Figure 2)

Figure 2



The profile of the bridge crossing based on the points taken in the field and displayed in HEC RAS is shown on Figure 2. Based on the points taken in the field the bridge span is 41.2 feet.

Figure 3: Field determined location of bridge – points indicate (roughly) where on the profile bridge edges were set



**Results:** Width of modeled inundation for the 100-year event at the bridge location is 33 feet. The bridge in the proposed location as modeled, however, would not clear this event because inundation just barely covers the eastern edge. Figure 4 shows the 2-year to 100-year flood inundation levels (black dots are the edges of the bridge). Figure 5 shows the water surface profile for all inundation levels. Finally, Figures 6 and 7 show cross sections with inundation levels for the 2 year to 100-year events at the cross sections just above and below the bridge.

**Recommendation:** Field measured span of the bridge was 43 feet. Based on the inundation span of 33 feet and the topography in the area, the bridge should be a minimum of 40 feet. If we would like to keep the current western edge of the bridge the total bridge span should be no less than 45 feet. If we moved the western edge toward the east a smaller span of 40 feet could be possible.

Figure 4

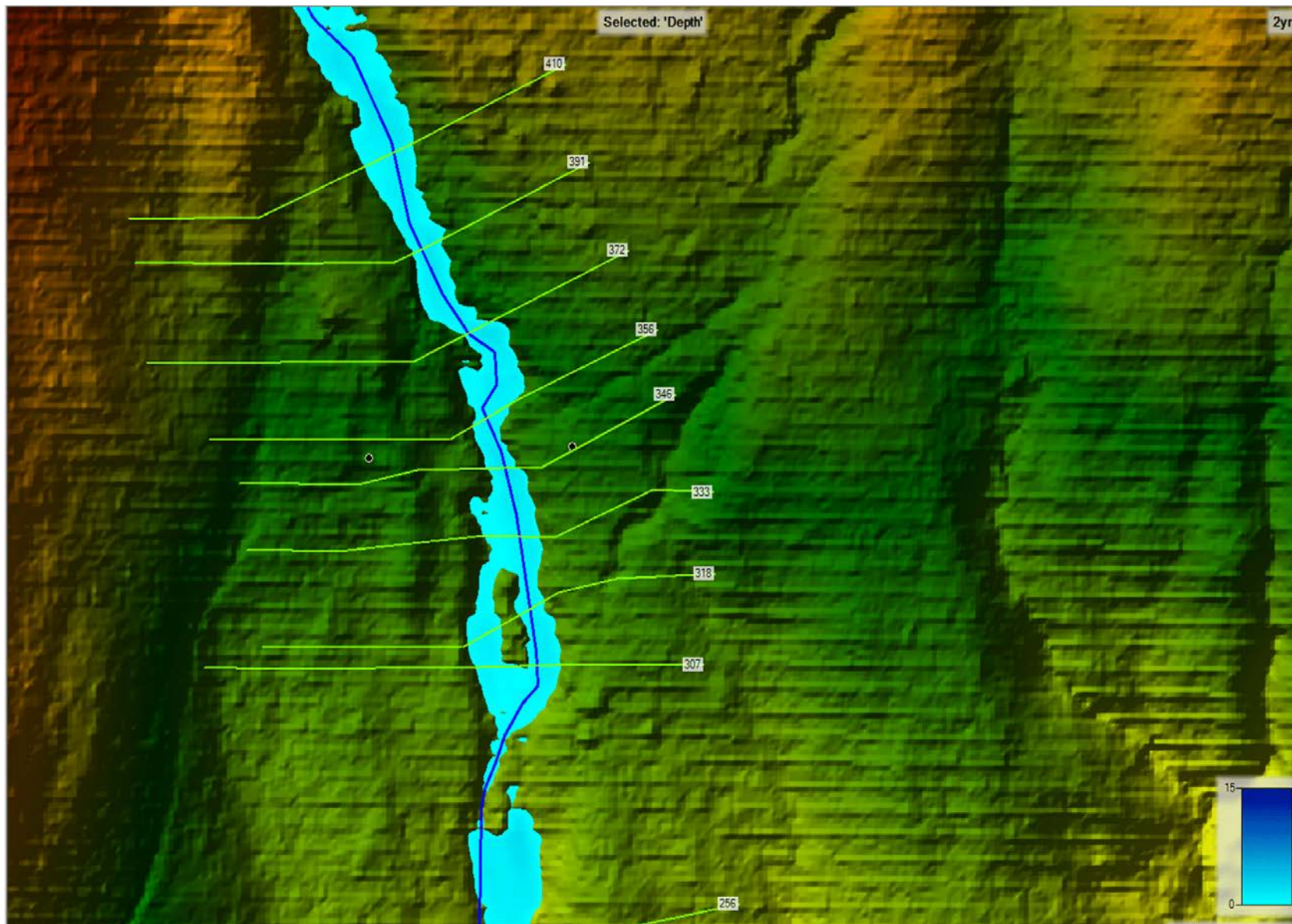


Figure 5

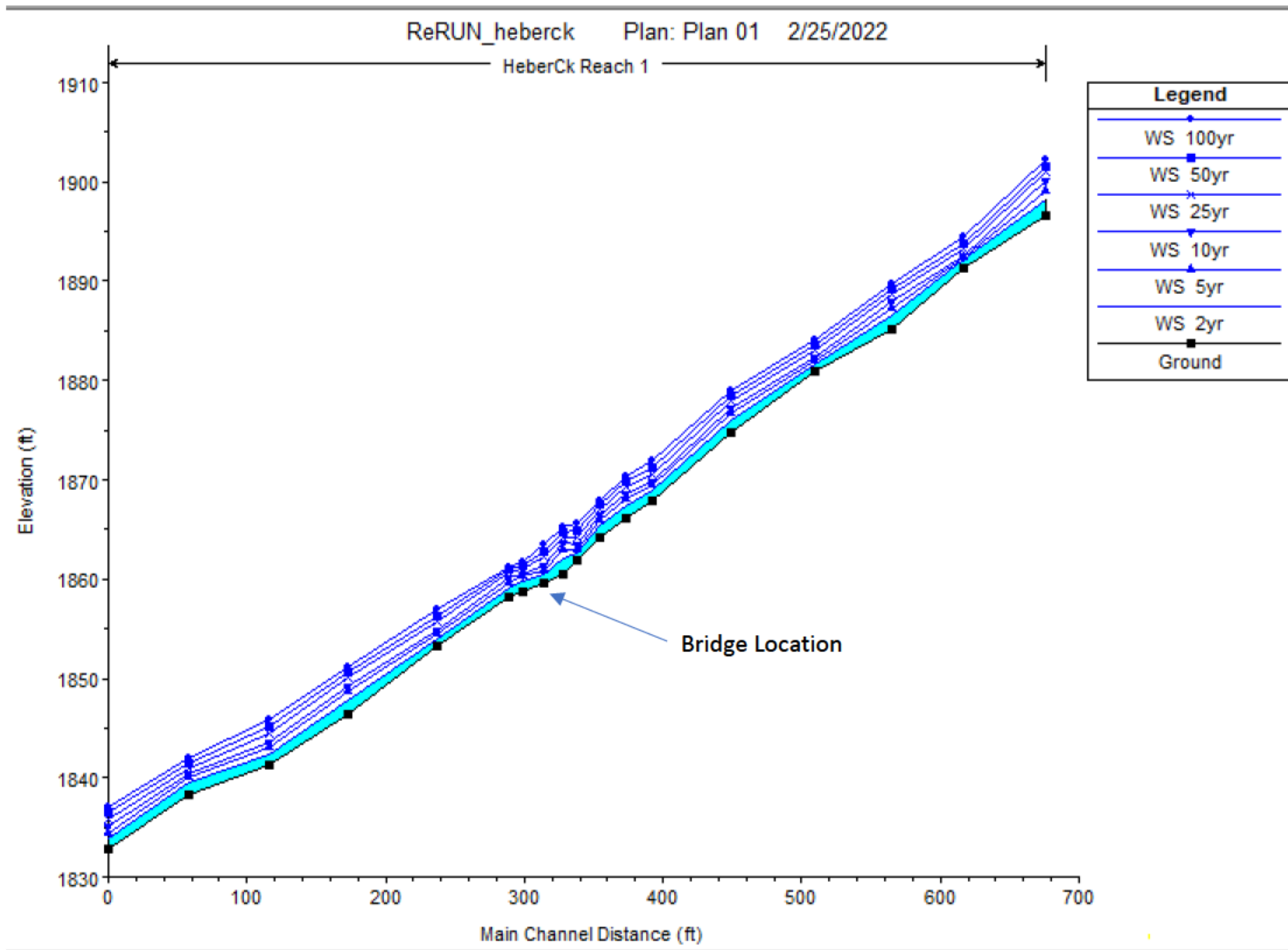


Figure 6 – Cross Section above the bridge location (356 on Figure 4)

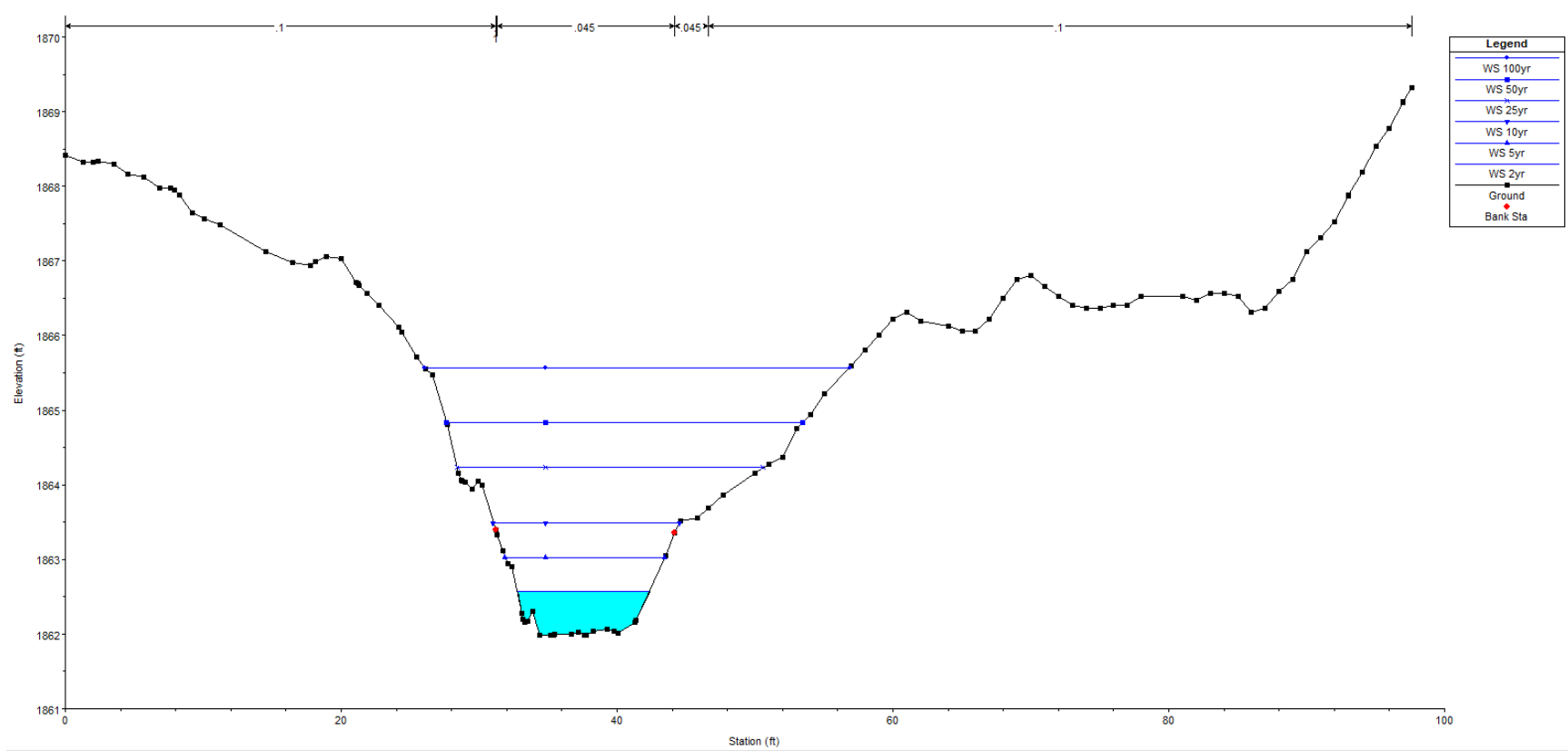
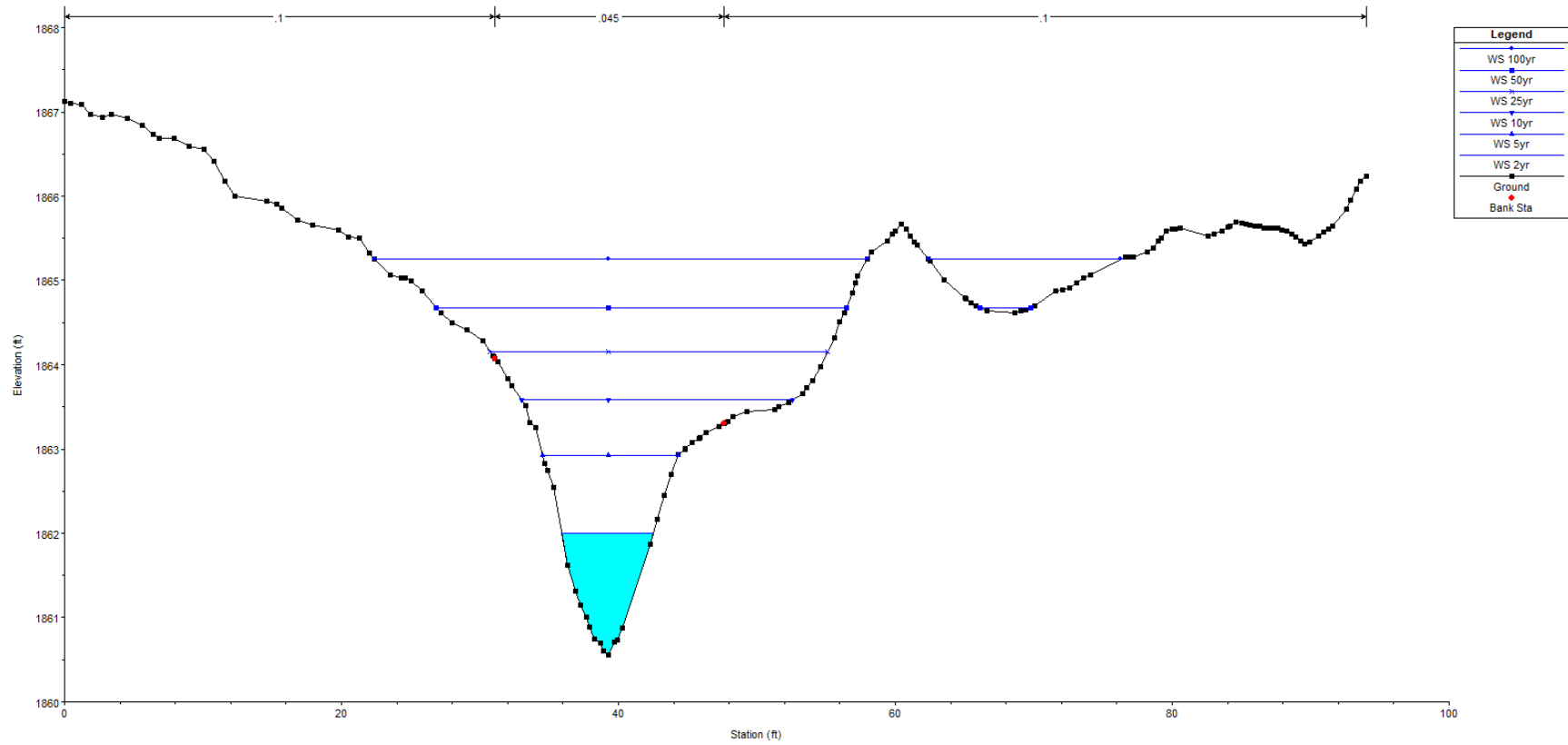


Figure 7 – Cross Section below the bridge location (346 on Figure 4)



# Decision Memo

## Trail Re-Routes and Maintenance Project

USDA Forest Service  
Tonto National Forest  
Payson and Mesa Ranger Districts  
Gila and Maricopa Counties, Arizona

### Background

Many Forest Service System Trails on Tonto National Forest (Forest) are historic trails adopted into the system knowing current alignment was not in the most sustainable locations. The Forest has collaborated with Rim Country Trails Working Group to improve the environmental condition and user safety of trails surrounding the Town of Payson, Pine and Strawberry. The working group is comprised of members from these local communities, and partners from Gila County, Arizona Trail Association, Pine Strawberry Fuels Reduction Inc., National Forest Foundation, Wild Arizona, Friends of the Tonto, and Volunteers for Outdoor Arizona. The group identified the Highline National Recreation Trail (Highline Trail), Arizona National Scenic Trail – White Rock Mesa Passage 25 (White Rock Mesa Trail), Arizona National Scenic Trail – Sunflower Passage 22, Strawberry Trail, and Red Rock Spring Trail as priorities for improvement.

The Proposed locations are:

Highline Trail #31, Payson Ranger District: Township 11N, 12N, Range 9E, 10E, 11E, 12E, 13E and Sections 22, 33, 23, 34, 35, 26, 24, 19, 20, 21, 16; 15, 28, 27, 26, 35, 19; 20, 6, 33, 4, 3, 2, 11.

Good Enough Trail #29, Payson Ranger District: Township 12N, Range 9E, Section 30.

Strawberry Trail #15, Payson Ranger District: Township 12N, Range 9E, Sections 26, 35.

AZT-Passage 25 Short Reroute, Payson Ranger District: Township 11N, Range 8E, Section 20.

AZT-Passage 22 Sunflower Area, Mesa Ranger District: Township 16N, Range 9E, Sections 1, 6, 12, 7, 18.

### Purpose and Need

The goal of this project is to prevent erosion, improve watershed health and water quality, increase user safety, and reduce maintenance of Highline, White Rock Mesa, Strawberry, Red Rock, and Sunflower system trails. This work will also provide a more enjoyable non-motorized trail experience for recreational users (mountain bikers, hikers, and equestrians)

The need is to comply with the Tonto National Forest Land and Resource Management Plan (RMP) direction of managing recreation resources and increasing opportunities for developed and dispersed experiences and area goals of providing for a variety of user experience levels, resource protection and public safety.

## Proposed Action

This project authorizes repair, reconstruction, and maintenance of five sections of trails. The re-route sections would seek to move the trail to a more sustainable location providing a higher quality single track trail experience for all user groups for future generations to come. All work will continue to align with the existing Trail Management Objectives (Class 3 trail with native surfacing and a typical tread of 18-24 inches). All work will be done in accordance with FS trail specifications. Small trail machines may be used in places where it is more efficient.

Following the construction of the re-routed trail sections, the former trail prism will be reclaimed to reduce lasting impacts to the watersheds that the Highline trail crosses. The former trail sections will be blocked to foot traffic. Compacted tread will be broken up and/or scarified by hand approximately 4 inches deep to allow native grasses, plants, and seed to take hold and grow. In sections where appropriate, native seeds will be used to help to augment revegetation. In order to prevent further erosion on the trail bed the natural contour of the slope will be reestablished. If rills have formed within the existing trail bed small one rock structures or Zuni bowls will be installed within the existing trail bed only to arrest erosion. All trail reclamation work will follow the 0723-2806-MTDC: Trail Construction and Maintenance Notebook (2007) as a guide.

As funding permits, water crossings may be constructed where the trail crosses at Bonita Creek, Mail Creek, East Verde River, Dude Creek, Dry Dude Creek, Webber Creek, Tonto Creek, and Christopher Creek. Helicopters may be used to transport supplies. These crossings will prevent erosion of stream banks at stream/trail crossings, improve the safety of the trail, and provide access during periods of higher runoff. Recreation staff will consult with engineering and other interested staffs for the structure design and will follow the direction outlined in Bridges and Structures (FSM 7722 and FSM 7736).

## Conservation Measures

The Forest Service proposes these conservation measures to minimize effects to the owl and its critical habitat, CLF and its critical habitat, and Gila Trout and their habitat.

- Workers will construct trail re-route segments, decommission of old trail segments, maintain trails, and install pedestrian bridges between September 1 and February 28 to avoid owl disturbance during the breeding season (March 1 – August 31). The Forest Service may waive these timing restrictions on a case-by-case basis if protocol surveys confirm non-nesting or an active nest is more than 0.25 mile from project work. The Forest Service may also waive timing restrictions if the District Biologist, in coordination with the FWS, determines actions within 0.25 mile of Protected Activity Centers (PAC) will not disturb nesting owls.
- Trail crews will not camp inside or immediately adjacent to PACs and nest /roost recovery habitat to minimize effects to owls and their habitat.
- Woody debris (large and small) removed for re-route construction or maintenance inside PACs or owl habitat (critical and recovery habitat) must be left in as natural a condition as possible nearby to maintain cover for owl prey species.
- The Forest Service will maintain to the extent practicable the key habitat components of owl habitat (recovery and PAC) and the primary constituent elements (PCEs) of critical habitat while removing vegetation during trail re-route, decommissioning, and maintenance activities.
- The Forest Service will adhere to the following bridge construction conservation measures:
  - The Forest Service will designate areas for equipment staging and stockpiling materials to minimize the area of ground disturbance and effects to special status and listed species and their habitats.
  - The Forest Service will limit construction areas to the minimum area necessary for completing the project (approximately 1/10 of an acre or less) and confine disturbance within the area. This area accommodates staging materials outside the riparian area, a minimum of 300 feet from stream.

- Bridge design will span bankfull stream flows or greater, so structures will not affect stream geomorphology or woody recruitment into the stream.
- Bridge design will accommodate upstream aquatic species movement and be wide enough to prevent constriction of stream flow.
- The Forest Service will implement the following strategies at bridge sites occupied by federally listed species to reduce, minimize, or eliminate effects:
  - Crews will construct bridges during low water periods in the fall to reduce or eliminate disturbance to streams, trout spawning, owl nesting, and minimize sedimentation.
  - Hydrologists and engineers will design bridges as free-span structures with no mid-span pier to prevent trout habitat alteration. The Forest Service designed bridges will allow for the wide variety of stream flow and movement of woody debris.
  - Crews will not use treated wood for construction to prevent chemicals from entering the stream.
  - Crews will construct bridges with rebar supported sills (abutments) to reduce or eliminate ground disturbance activities that can add sediment to streams.
- Construction may require helicopter cargo transports by sling load to drop materials at bridge sites with difficult access.
  - All helicopter flights will occur outside the owl-breeding season to eliminate disturbance to breeding owls. If it is safe to do so, pilots will avoid flying directly over PACs.
  - Crews will clearly mark drop points to reduce hovering time and exposure. Helicopter crews will receive, in advance, coordinates for each drop point.
  - Whenever possible, pilots will fly above 345 feet AGL until they reach the drop point.
- Crews will not conduct trail maintenance, re-route, or decommission work within 0.1 mile of CLF occupied sites or designated critical habitat during their active season (April through September) unless CLF protocol surveys show the site is unoccupied.
- Crews working in wetted areas within dispersal distance to known CLF sites would follow decontamination protocols outlines in the CLF recovery plan.
- The Forest Service will approve in advance, construction and drainage plans to ensure appropriate erosion control measures such as rolling grades, grade reversals and drain dips.
- A biological monitor will be present when proposed activities occur at stream crossings occupied by Gila trout or CLF to minimize or prevent disturbance.
- The Forest Service will conduct proposed activities across streams occupied by federally listed aquatic species during low flow periods (June or October) to reduce effects to streams and disturbance to listed species, consistent with previously identified owl and CLF timing and proximity conservation measures. Work at stream crossings will occur when dry whenever possible. In perennial streams, work will occur during low water when a biological monitor is present. Habitat at the Chase Creek bridge site at during low-flow is not likely to support fish because of increased water temperature, reduced pool depth, and the potential for no surface flow.
- All helicopter flights will occur outside the owl-breeding season and if safe to do so, flight paths will avoid flying directly over PACs.

## Decision

It is my decision to authorize the implementation of the Trail Re-routes and Maintenance Project as presented in the Proposed Action section of this document. The proposed action employs conservation measures and the design features will be consistent with Forest Service trail specifications.

## Reasons for Categorically Excluding the Proposed Actions

I have concluded that this proposed action falls within the categories of actions listed in the Forest Service National Environmental Policy Act Handbook (FSH) that are excluded from documentation in

an Environmental Assessment or Environmental Impact Statement. This categorical exclusion is found in FSH 1909.15, section 32.2 (1) "*Construction and Reconstruction of Trails.*"

I have determined that there are no extraordinary circumstances associated with this project that would preclude the use of this category. This determination is based on the absence or the negligible level of adverse effects on the following resource conditions:

**a. Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species**

On March 23, 2021, the USFWS concurred with the Forest Service's determination that this project may affect but is not likely to adversely affect Mexican Spotted Owl and critical habitat, Gila Trout, and Chiricahua Leopard Frog and critical habitat.

**b. Flood plains, wetlands, or municipal watersheds –**

There are no Flood plains, wetlands or municipal watersheds within or adjacent to the project area.

**c. Congressionally designated areas such as wilderness, wilderness study areas, or national recreation areas –**

There are no wilderness study areas, or national recreation areas within or immediately adjacent to the project area.

**d. Inventoried roadless areas or potential wilderness areas –**

There are no inventoried roadless areas within or adjacent to the project area.

**e. Research natural areas –**

There are no research natural areas within or adjacent to the project area.

**f. American Indian religious or cultural sites; and archaeological sites, or historic properties or areas –**

The Tonto National Forest Archeologist recommended clearance for the project. The survey report recommended avoidance and by implementing design features and mitigation measures, there will be no adverse effect to cultural resources. The IS&A, 2021-12-062 was completed for the Sunflower portion and the IS&A, 2012-12-059, was completed for the other sections.

## **Public Involvement**

Ten interdisciplinary team members provided internal scoping and determined that no extraordinary circumstances exist. In November of 2020, a scoping letter was sent out to interested parties, two comments expressed support and one asked for additional information.

## **Findings Required by Other Laws and Regulations**

This decision is consistent with the Tonto National Forest Land Management Plan. The project was designed in conformance with the Forest Plan and other federal and state law, policy, and direction applicable to the resources present in the Tonto National Forest. *The National Forest Management Act of 1976 (Public Law 104-33, as amended)* requires the U.S. Forest Service to provide for biological diversity on National Forest Service lands consistent with overall multiple-use objectives and to

maintain viable wildlife populations in the planning area. The Forest Plan discloses forest-wide standards and guidelines and management area direction.

Implementation of this decision will not violate any Federal, State, or local laws or requirements imposed for the protection of the environment including:

- Clean Water Act, as amended
- Clean Air Act, as amended
- Endangered Species Act of 1973, as amended
- American Antiquities Act of 1906 and Historic Preservation Act of 1966
- Executive Order 13186 of 2001, Migratory Bird Treaty Act
- Executive Order 12898 of 1994, Environmental Justice
- Executive Order 11988 Floodplain Management
- Executive Order 11990 Protection of Wetlands

## Implementation Date

This project is not subject to appeal. I anticipate implementing the Trail Re-route and Maintenance Project immediately.

## Contact

For additional information concerning this decision, contact: Angie Abel, Payson Ranger District, 1009 E. Hwy 260, Payson, AZ 85541 (928-) 474-7900.

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**MATTHEW M. PACIOREK**  
District Ranger

Date

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