



User Guide to the San Francisco River of Eastern Arizona



Acknowledgments

The Gila Watershed Partnership would like to thank the many local people who use their limbs, minds and hearts to help care for the San Francisco River. We would especially like to thank those who have spent long lives on the Frisco, who have shared their memories and their love of the river with us. We know their stories will inspire others for years to come. The Friends of the Frisco get a special nod for bringing together Greenlee County residents, old and new, to clean up the river banks and inform the public about river issues. Finally, many thanks to the people of the Arizona Department of Environmental Quality, Water Quality Division, for their help and support in our mission to understand and reverse contamination issues on the San Francisco.



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Cover photo ©2010 Gerald B. Allen, *American West Travelogue*

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“We used to go way up the river when we were kids. They’d get a wagon and burros or horses and drop us off at the Blue and we would walk all the way from the Blue to the swinging bridge. It would take us two nights. In the mornings we’d do a little fishing, a little cooking. We didn’t have instant oatmeal, but we took some potatoes with us!”

—*Raul Lopez*

From an interview for the Arizona Memory Project

The San Francisco River watershed is one of Arizona’s most beautiful and precious wilderness areas. This book was created to give residents and visitors a sense of its history, and to provide a quick-reference guide to a unique natural treasure.

The “Frisco” is the largest tributary to the Gila River. Its waters are critical to the immediate area and to downstream agriculture and recreation. In recent times it has also become important to distant urban areas, that are turning their attention toward the Upper Gila and the Frisco for future water supplies.

Remote by any measure with its rugged topography traversing the southern Arizona-New Mexico border and its sparse human settlement—about two souls per square mile overall—the San Francisco-Blue River watershed is framed by magnificent vistas and is almost primeval with wildlife.

The 2,766 square-mile basin consists mainly of undeveloped mountainous tracts that are forested with Ponderosa pine, spruce and fir at higher elevations and juniper, cedar and piñon at lower elevations. The riparian areas—the corridors along the rivers and creeks—are richly vegetated with cottonwoods and native willows. Grassy high pastures have evolved into semi-arid, mixed, high-desert vegetation due to a combination of drought and historic overgrazing by cattle, sheep and goats. With elevations ranging from 3,400 to 8,000 feet, the watershed is mainly wild, inaccessible and stunningly beautiful.

The earliest human populations lived seasonally along the San Francisco and the Blue to take advantage of excellent hunting.

The famous Vásquez de Coronado exploration party is said by some to have passed through in 1540. Whatever their actual routes, the explorations of the mid-1500s marked the beginning of Spanish and then Mexican influences that are dominant to this day throughout the region. Anglo-Americans are first recorded in the watershed in 1824, when the trapper James Ohio Pattie led a small band up the waterway, feeding on wild turkeys and killing beaver.



"Dear Brother, Sorry to hear you are sick. We have just had another flood on the 4th."
 Courtesy Greenlee County Historical Society

Pioneer ranchers were settling both the San Francisco and the Blue by the mid-1880s, using the streambeds as roadways. In the same period, the town of Clifton arose as one of the Southwest's biggest copper-mining districts. This transformed some of the mountainous reaches, that were deforested for construction timbers as well as smelter fuel and firewood. Mining also brought an international character to Clifton, with workers streaming in from Mexico, Great Britain, Italy, Eastern Europe and China.

Mining and cattle ranching remain the dominant land uses today in the watershed, though ranching has been significantly reduced, leading to a resurgence of riparian vegetation. The great copper mine at Morenci has hollowed out the slopes just beyond the high ridge on the San Francisco basin's southwestern boundary.

The San Francisco's hydrology dictates that its residents live in a state of disaster preparedness. High-water events are common in the region. A big winter storm or summer monsoon, or the edges of a rare but deadly fall hurricane, may send a wall of water down the narrow river canyons. Clifton flooded in the winters of 1891 and 1905-06, and in the fall of 1916. It was again partially destroyed by hurricane-related rains in October of 1972 and October of 1983.

Today the San Francisco watershed is a destination for camping, swimming, fishing, hiking, horseback riding, picnicking, four-wheeling, hunting, birdwatching, boating, nature photography and just for relaxing in a lovely, quiet spot. The many river accesses on both public and private lands offer a variety of opportunities to enjoy the waters and the magnificent lands around them.

This guidebook will help readers understand not just what is available to them but what other visitors may be seeking. We hope it will help in building both knowledge of and respect for the river.

— LEGENDS —

By Walter Mares, Managing Editor, The Copper Era



Geronimo and warriors



*Clifton on January 19, 1916
Courtesy Greenlee County Historical Society*



*Clifton on October 2, 1983
Courtesy of the Greenlee County Historical Society*

Birthplace of a World-renowned Warrior

According to respected biographers, the great Apache warrior Geronimo said that he was born in the place “where the three rivers meet.” Some accounts tell that Geronimo said that he was born in Arizona, despite other claims that his birthplace was in the Gila Wilderness area of New Mexico.

There are caves where the Gila and San Francisco Rivers and Eagle Creek meet. The riddle of Geronimo’s birthplace may never be solved, as passionately as scholars and dilettantes alike defend their pet theories, and as much as the great warrior himself seemed to enjoy spinning legend about the place where he took his first breaths.

The Big Flood

Eighteen-ninety-one, 1905-06 and 1916 were all flood years in Clifton, Arizona. A 1972 high-water event sent the San Francisco River over its banks into downtown business and residential neighborhoods again.

On October 1, 1983, following nearly a week of steady rain, “The Mother of All Floods” devastated Clifton. A US Geological Survey gauge mounted on the Coronado Bridge topped out at 90,000 cubic feet per second before the gauge station disappeared underwater.

During the days of the flood, communication was poor and often nonexistent between people on opposite sides of the river. Telephones weren’t working and an antiquated police radio system was heavily taxed. Many families were separated by the raging river, often not knowing whether their loved



Gila Watershed Partnership

ones had escaped or even survived. Three historic sections of the town—North Clifton, “Okie Town” and “Eastside”—were mostly destroyed, though not one human life was lost.

The flood waters began to subside on the third day. By that afternoon, County Search & Rescue vehicles were able to negotiate the water and deep mud that covered the only road through town. The destruction was stunning. A large cottonwood tree was rammed through the wall of a brick home next to the Coronado Bridge. Mud and silt lay deep everywhere floodwaters had reached. The stench from the flood remained in some parts of town for more than a year, especially in pockets where the mud and silt were inaccessible.

Hot Springs

Along the San Francisco River as it flows through Clifton are natural hot springs created by underground volcanic activity. In the 1920s, Clifton was promoted as a tourist’s paradise, in part because of a spacious hot mineral pool along the banks of the lovely Frisco. Then the Great Depression set in and tourism vanished. A later flood destroyed the hot mineral water feed to the pool.

Today, steam can be seen rising from certain spots along the river on a cool morning, but there are no known sites where people may access hot springs.

Mammals

The phrase “watchable wildlife” is somewhat of an oxymoron because most wild animals are notoriously uncomfortable with the concept of being seen, and they run off at the slightest provocation. There are plenty of animals that frequent the San Francisco River riparian corridor, but seeing them is mostly a matter of good luck.

A notable exception to the rule would be the local population of Rocky Mountain bighorn sheep. They are a common sight in the town of Clifton, all around the adjacent open-pit copper mine, and they are frequently seen near the river. Using binoculars to scan the craggy hills above the river and town may reveal them looking right back at you with their own binocular vision.

The steep, rocky mountainsides that flank the river afford them the security from predators that they are accustomed to, and they are more or less safe from predation while living around us humans too. During the hot summer months, these large herbivores need drinking water and can be spotted lounging close to it, in the riverside park. Bighorn sheep are regularly encountered along the US Highway 191, and they don’t seem to be very disturbed by rubbernecking drivers so long as the car doors don’t open...they won’t stick around for that!

As with all wild animals, keep a safe distance away and refrain from approaching too closely. Rams are in the rut during autumn, and they have a hostile disposition towards other rams. Watching their famous head-to-head combat is exciting,



Bighorn Sheep (Ovis Canadensis)
Terry A. Johnson, reptilist.com



Javelina (Peccary angulatus)
Jim Johnson

but don't let your awe cause you to close the distance, or their territorial hostility just might zero in on you.

Some of the other mammals that are known to live along the San Francisco River are raccoon, javelina, beaver, Ringtails, skunk, Gray fox, coatimundi and Mule deer.

Large predators that help to balance the ecosystem are mountain lion (puma), Black bear, coyote and bobcat. Mexican grey wolves have been re-established in northern Greenlee County and are thriving near the headwaters of the San Francisco River so, thankfully, there is now the exciting possibility of seeing a wild lobo too.

Reptiles and Amphibians

The San Francisco River is rich in reptile and amphibian life. Reptiles such as snakes, lizards and turtles add much to the naturalist's experience during those special moments spent strolling through the riparian habitat that graces our corner of the state.

Snakes are seldom seen, but that doesn't mean they aren't watching you, or have sensed your coming and beat a hasty retreat. There are four species of rattlesnake that can be found along the San Francisco River: The Western diamondback rattlesnake, the Mojave rattlesnake, the Northern black-tailed rattlesnake and the Arizona black rattlesnake.

Whether a person fears them or admires them, a rattlesnake sighting is almost always the excitement highlight of the day. If you are lucky enough to see one, the very best thing to do is to leave it alone to go its own way. Unfortunately, some people lack self-control and feel instinctively compelled to attack the animals. But beware: that is how most bites occur. Wage a war on a snake and sometimes the snake wins. Killing one snake does not make a person safer, because there are always more where that one came from. It's their home; they



Black-tailed Rattlesnake (Crotalus molossus)
Terry A. Johnson, reptilist.com



Mojave Rattlesnake (Crotalus scutulatus)
Terry A. Johnson, reptilist.com



Gila Monster (Heloderma suspectum)
Erik Bettini

live there. If you want to be completely safe from snakes, then just stay home.

There are many other snakes that live in the area too, most of which are completely harmless. (They still have teeth and can bite, however.) Gopher snakes are large constrictors whose behaviors and coloration sometimes cause them to be mistaken for rattlesnakes, often to their own undeserved demise. Black-necked garter snakes are another common reptile and they spend most of their time in or near the water. They are very pretty little animals with a grayish-green base color and three stripes running the length of their bodies (one on top and a stripe on each side). Among the mesquites and cottonwoods live the Whip snakes, that are long, skinny, diurnal speedsters that hunt lizards. Arizona coral snakes live here too and, although they do have a potent, neurotoxic venom, by virtue of their small size they are incapable of delivering a lethal dose of venom to most people. They should be left alone; do not pick them up.

The most obvious reptilian residents are the lizards. Except for the seldom-seen Gila monster, they are all harmless to people. Down in the sandy river bottom, you will often see a species of lizard that runs off waving a zebra-looking tail of black and white. Those are called Greater earless lizards, and yes, they lack external ear openings. In the trees and on the rocks are bark-colored species that sometimes have blue bellies (the males do, anyway). The small ones are called Tree lizards, and the large ones are usually a subspecies of spiny lizard named Clark's spiny lizard. Other species that may be seen are the large and conspicuously green Collared lizards; the striped-back, never-stop foragers known as Whiptailed lizards; and the very common little Side-blotched lizards.

Turtles might also be encountered. As fishermen know well, the Spiny soft-shelled turtle makes its living in the water and sometimes takes the bait, literally. This species has a flat, leathery shell and can get quite large. They are all more than



Ornate Tree Lizard (Urosaurus ornatus)
Terry A. Johnson, reptilist.com



Chiricahua Leopard Frog (Lithobates chiricuensis)

willing to bite, so keep your hands off. Another turtle, an Arizona native, that can be found in brackish side pools along the river, is the Sonoran mud turtle. These are small chelonians, usually under four inches across. They have also been known to bite, and they put up a stink.

Although there are no Desert tortoises occurring naturally along the river, the Ornate box turtle can be found there and all across Southeastern Arizona, primarily within the Chihuahuan desert biome. Both the Desert tortoise and the Ornate box turtles are protected species in Arizona and may not be kidnapped from the wild, no matter how cute they are.

Worldwide, amphibians are dying from environmental waste and chitrid disease, that is caused by a type of fungus. One strain of this fungus, *Batrachochytrium dendrobatidis*, or Bd, appears to be capable of infecting most of the world's approximately 6,000 amphibian species.

Many of those species develop the disease chytridiomycosis, that is linked to devastating population declines and species extinctions. The fungus can exist in water or mud and is spread by wet or muddy boots, vehicles, cattle and other animals moving among aquatic sites. Frogs, toads and salamanders live in or near water and need water to reproduce. Their susceptibility to distress in their habitat make them today's version of an environmental miner's canary. If they're in trouble, then so are we!

The San Francisco River is home to several species of toad and at least two frogs. The familiar Leopard frogs are in rapid decline and are now a protected species that may not be caught, killed or harmed in any way. The incredibly cute Canyon tree frogs can sometimes be found clinging to granite boulders along the water's edge. They look exactly like granite themselves. Another popular frog that everyone knows, at least by sound, is the bullfrog. The bullfrog is a fierce predator that has been named as another serious reason for the decline of our native frogs. Bullfrogs are an invasive and unwelcome



Mallard Ducks (Anas platyrhynchos)
Ginger Pattison



Phainopepla (Phainopepla nitens)
Greg Cooksey

species that may be harvested under fishing regulations, and you are encouraged to do so.

Reptiles and amphibians need our help, not our hatred. We can't lose by having admiration, respect and compassion for the smaller animals that form the foundation of a healthy ecosystem. We may seem to be far removed from the fate of lesser beings in our world, but the more we learn about them, the more we realize we are all interconnected. Eventually, we as a species may suffer for the decline or even extinction of the wildlife we held in low esteem.

Birds

Thanks to local bird lover Nancy Gregory for these notes.

The San Francisco River area remains largely undiscovered by “birders.” The area is home to a number of species and is especially busy in the fall and spring with a variety of migrating birds. Bald eagles and other raptors, as well as Great blue herons, reside in the area. These are joined by migrating Common black hawks in the winter and Zone-tailed hawks in the spring. American kestrels breed in the cliffs above the San Francisco. Gambel's quail and wild turkeys are year-round residents.

The harbinger of spring is the Phainopepla, a species of silky flycatcher. This bird is very fond of the hackberry trees near Hole in the Rock. Arriving after the Phainopepla are the brilliantly colored Vermillion flycatchers, cardinals, Western tanagers and several varieties of hummingbirds. Another spring visitor is the Wood duck. Belted kingfishers have been spotted in the area in the winter months, and there are many species of warblers and orioles that visit the area in the spring and summer.

Aquatic Life

Thanks to Heidi B. Blasius, Fisheries Biologist, US Bureau of Land Management, Safford Field Office, for the information below.

The San Francisco River historically supported ten native fish species, five of which are now threatened or endangered:

- Gila trout—threatened without critical habitat
- Gila chub—endangered with critical habitat
- Loach minnow—threatened with designated and proposed critical habitat
- Spikedace—threatened with designated and proposed critical habitat
- Gila topminnow—endangered without critical habitat
- Roundtail chub—candidate
- Longfin dace
- Speckled dace
- Sonora sucker
- Desert sucker



Spikedace (*Meda fulgida*)
Glen Knowles, US Fish and Wildlife Service



Loach Minnow (*Rhinichthys cobitis*)
Glen Knowles, US Fish and Wildlife Service

“Critical habitat” is defined by the Endangered Species Act as a specific geographic area or areas essential for the conservation of a threatened or endangered species that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but will be needed for its recovery.

Three of the five threatened or endangered species above have critical habitat either proposed or in place. Two species, the Gila topminnow and Gila trout, have neither. Another aquatic resident of the watershed that is threatened with proposed critical habitat is the Chiricahua leopard frog. The introduction, spread and establishment of non-native fish species are primary factors in losses of native aquatic species in the San Francisco River.

Non-native fish and other aquatic organisms may eat the natives or their eggs, or they may compete, often very successfully, for the natives’ food supplies. Many of the culprits have been introduced by anglers, either as bait or as sport fish. The non-native fish recorded from the San Francisco include the following:

- Red shiner
- Fathead minnow
- Common carp
- Western mosquitofish
- Channel catfish
- Flathead catfish
- Smallmouth bass
- Green sunfish

Other non-natives that are extremely harmful to native fish in the San Francisco include the following:

- Texas spiny softshell turtle
- Crayfish

The non-native American bullfrog may also be present within the drainage.

Enthusiastic anglers often have no idea of the consequences of introducing non-native aquatic species to the river. It can’t hurt to pass this information along to anyone who might make an unwitting contribution to the demise of some native populations.



— PROPERTY: PRIVATE, STATE AND FEDERAL —

*About Private Property on the San Francisco River
A message from Dr. Suzanne Menges, educator and cattle rancher:*

Welcome to the beautiful river country of Greenlee County!

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From unexplored box canyons to the outstanding likelihood of encountering wildlife, the picturesque rivers of this region we call home bring many visitors back to our area year after year. Birdwatchers, metal-detector enthusiasts, hikers and those who are just looking for a chance to explore the many nooks and surprisingly picturesque meanderings of our rivers have enjoyed the unique beauty that Greenlee County has to offer each season.

Our family has ranched here for decades and has encountered many different attitudes about recreating on and respecting public and private lands. Most people respect the property of others and want to promote a positive image of their sport or group. But not all visits to our river areas are positive. We have rescued abandoned domestic animals that have been left under bushes, called in emergency medical services for injured campers, picked up truckloads of trash left by hunters and pulled out many a vehicle stuck in a sandy wash. As with so many situations, it is the few violators who ruin opportunities for the majority.

We can never assume that those who are out enjoying all that our striking landscapes have to offer actually know what to do when in the great outdoors. Landowners are very appreciative of common-sense courtesy shown by visitors to their area. It is to your advantage to make the landowner your friend remember, he or she just might be the person you need to call on for help if something goes wrong. And, rest assured, a lot can go wrong on a camping trip!

Some points to keep in mind:

- Before you go exploring or set up camp, come by the ranch or farm house during the day to let someone know where you will be, how many are in your party and how long you plan to be in the area. If you are hunting, do not approach the home or the landowner carrying your gun or with your entire hunting party in tow. Leave your dogs in your vehicle. A good time to visit is just before sundown when many landowners, especially ranchers and farmers, are more likely to be home.
- Leave a letter if no one is home, providing your contact information and including the details of your visit.
- Don't be offended if you are asked for your name and vehicle license number. This is more than a courtesy to those living in remote areas it is an important safety practice that has helped us locate a lost hunter or hiker.
- Leave gates the way you found them. If a gate is open, leave it open after you pass through. And yes, you should get out of your vehicle and close the gate if it was closed when you arrived.
- Do not leave any trash. If you find litter already there, pick it up and pack it out.
- Leave livestock and farm animals alone.
- Never shoot near farm or ranch buildings.
- Notify the landowner if you see broken fences, injured animals, vandalized equipment or unruly trespassers.
- If you are on an off-highway vehicle, always yield to those on horseback. The noise and speed of your vehicle can easily startle a horse or a herd of cattle. When you encounter horses, move to the side of the trail, stop, turn off your engine, remove your helmet and speak to the riders—they may need to communicate with you to keep you and their horses safe.

- Do your part by leaving the area better than you found it. Dispose of waste properly, avoiding the spread of invasive species, restore degraded areas and clean up after yourself and your pet.

Arizonans and our guests from other places have used our beautiful river areas for recreation and adventure for hundreds of years. We all have a responsibility to private-property owners, to the public lands and to others who want to enjoy the region. Everyone should do their part to ensure that these lands remain available for future generations to enjoy.

Freeport McMoRan Copper & Gold, Inc. Lands

Freeport-McMoRan keeps several popular spots on the river open for recreation. While it is not necessary to notify them of your intention to recreate on their land, treating their property with respect is by far the best way to encourage continuing access.

Town of Clifton

The Town of Clifton welcomes campers in the North Clifton RV Park, that includes a tent-camping area. The RV Park has restrooms. There are favorite areas for fishing, birdwatching, family picnics and strolling along the river in Clifton. The town has a plan for a multi-use, urban riparian park with a botanical garden, trails for foot and bicycle traffic, a dock for boating, an extensive campground with facilities, a birdwatching zone and a productive “urban forest” of trees that can be harvested for profit.

North Clifton RV Park and Campground

380 Frisco Avenue
Clifton, AZ 85533
Phone: (928) 865-9064
Phone: (928) 292-0221
<http://users.aznex.net/tocgov/>

Clifton Town Hall

510 N. Coronado Blvd.
Clifton, AZ 85533
Phone: (928) 865-4146



Clifton Riparian Park
Artist's rendering of proposed multi-use riparian park in Clifton

Arizona State Trust Lands

From www.land.state.az.us/support/faqs.htm:

Arizona State Trust lands are not “public lands,” and so are distinct from Federal lands under the management of the US Forest Service and Bureau of Land Management. Federal public lands are managed for the benefit and use of the public, while State Trust lands are managed for the benefit of 13 Trust beneficiaries, that include the public schools and prisons. The Land Department’s trust-management responsibilities include requiring a permit or lease and charging a fee for use of Trust land. Exceptions to this requirement are licensed hunters and anglers who are actively pursuing game or fish in-season, and certain archaeological activities permitted by the Arizona State Museum.

A Recreational Use Permit is temporary and revocable and does not permit commercial, competitive or group events. Lands leased for agriculture, mining, commercial or military purposes are not open to recreational use. Other State Trust Lands may be closed to some or all recreational uses due to hazardous conditions or dust abatement in coordination with the Arizona Game and Fish Department, or because of certain State, County or Local laws or ordinances.

Recreational Permit allows the signatory limited privileges to use State Trust Land for certain types of recreation. Recreation under this permit is limited to hiking, horseback riding, picnics, bicycling, photography, sightseeing and birdwatching. Camping is restricted to no more than 14 days per year per person. Off-highway vehicular (off-highway vehicle) travel on State Trust Land is not permitted without proper licensing.

The holder of an Arizona State Land Department Recreation Permit (Permittee) shall respect the land, the rights and improvements of other authorized users, and exercise appropriate discretion to protect native plants, cultural and historic sites, and the environment. Permittee shall stay on existing

and designated roads and trails. Permittee shall comply with all Federal, State, County and Municipal laws and ordinances while on State Trust Land.

- The Permittee shall not use State Trust Land that is closed by the State Land Commissioner.
- The Permittee shall not: disrupt plant and wildlife on, blaze trails across, visit historic and prehistoric archeological sites on or remove natural products from State Trust Land.
- The Permittee shall not cause any refuse or allow any other foreign objects to be deposited on State Trust Land.
- The Permittee shall not discharge a firearm on State Trust Land, except pursuant to lawful and licensed hunting.

Arizona State Land Department

1616 West Adams Street

Phoenix, AZ 85007

Phone: (602) 542-2119

www.land.state.az.us

Hours: 8:00 a.m. to 5:00 p.m., M-F

US Bureau of Land Management Lands

Recreational uses on Bureau of Land Management land in the San Francisco River watershed include hunting, dispersed camping (no developed sites), fishing, horseback riding, hiking, boating, birdwatching, photography, nature study and water play. Off-highway vehicle use is limited to roads and trails that existed at the time of the development of the Resource Management Plan in 1991. See the maps on pages 65-68. Call the Bureau of Land Management office for specifics on roads and trails.

US Bureau of Land Management Safford Field Office

711 14th Avenue

Safford, AZ 85546

Phone: (928) 348-4400

Hours: 8:00 a.m. to 4:00 p.m., M-F

US Forest Service Lands

The Forest Service website offers a treasure trove of information about recreation in the Apache-Sitgreaves National Forest, that includes all of the Blue River and the remote reaches of the San Francisco River. Go to www.fs.usda.gov/asnf/ and click on "Recreation." The new Travel Management Plan for the Apache-Sitgreaves is in the final stages of development, so be sure to check the web site before planning off-highway vehicle trips in the forest. The Clifton Ranger District station at "Three-Way" (the junction of Arizona Highways 191, 75 and 78) has lots of hand-outs, maps to study and knowledgeable people to answer your questions.

US Forest Service Clifton Ranger District

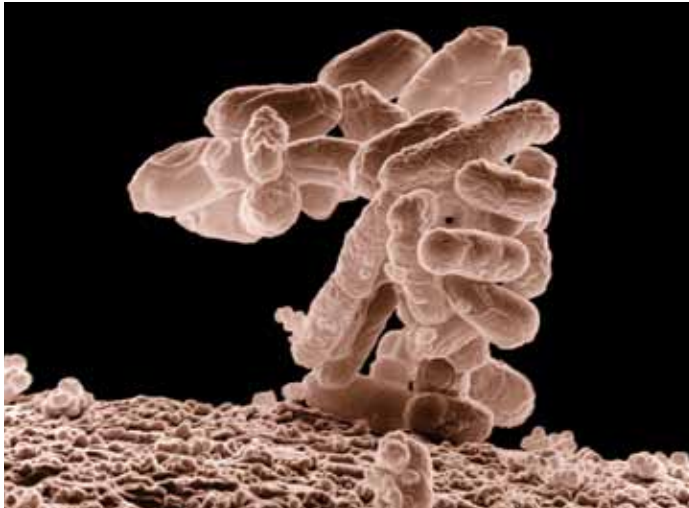
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Duncan, AZ 85534

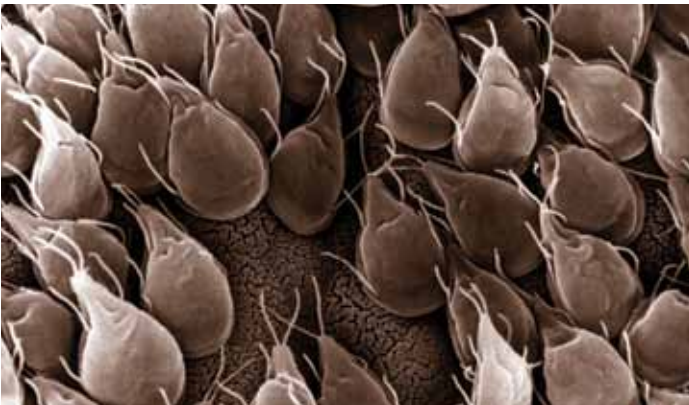
Phone: (928) 687-8600

TTY: (928) 687-1807

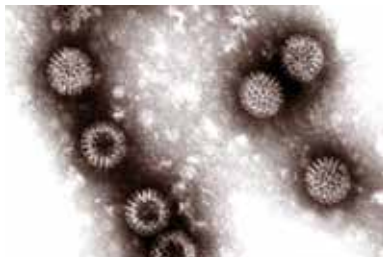
Hours: 8:00 a.m. to 4:30 p.m., M-F



Bacteria: *E. coli*



Parasite: *Giardia*



Virus: *Rotavirus*

Quick Facts about Contaminants

- Human and animal wastes can carry bacteria, viruses and parasites that can cause serious intestinal diseases in people. These potentially harmful microorganisms are known as “pathogens.”
- Enteric pathogens are those that infect the gastrointestinal tract. They are contracted via oral ingestion of fluids or materials that are contaminated with fecal matter, i.e. human or animal waste.
- Swimming and water sports are among the known ways that such infections occur in the United States. There have been very serious outbreaks of illness, including some fatalities, caused by waterborne pathogens in recreational waters, including natural bodies of water.
- *E. coli* is commonly used as an indicator for the presence of other, sometimes more dangerous, pathogens because it 1) is a marker for contamination of fecal origin, 2) is easy to collect and analyze and 3) is relatively safe to handle and generally harmless.
- In warm weather, when there is an increase in recreational use of surface waters (including rivers), the presence in the water of pathogens harmful to humans also increases.
- Public health experts are most concerned about waterborne pathogens that originate from the feces of humans and cattle. In studies of recreational waters, these are shown to cause

1. P. Standish-Lee and E. Loboshevsky, Protecting public health from the impact of body contact recreation, *Water Science and Technology* Vol 53 No 10 pp 201-207; J. A. Soller, M. E. Schoen, T. Bartrand, J. E. Ravenscroft, N. J. Ashbolt, Estimated human health risks from exposure to recreational waters impacted by human and non-human sources of faecal contamination, *Water Research* 44 (2010) pp 4674-4891.

more illness in humans than pathogens originating from other animals.

- The very young, the elderly and people with compromised immune systems are most vulnerable to gastrointestinal illness caused by waterborne pathogens. Typical symptoms include diarrhea, abdominal pain, fever, headache and joint pain, or respiratory infection.
- While gastrointestinal illness from contact with recreational waters is a serious health concern in the United States, this does not necessarily mean that swimming when *E. coli* levels are high will cause illness.

You can be part of the solution. With the single exception of the North Clifton RV Park, there are no public toilet facilities on the San Francisco. Bring a portable latrine to the river and pack out your waste. If absolutely necessary, you may bury the waste. Human waste should be disposed of in a shallow hole six to eight inches deep and at least 200 feet from water sources, campsites or trails. Cover and disguise the hole with natural materials. Pack out your used toilet paper or, at the very least, bury it well. And please encourage others to do the same. See the “Human Waste” section of this book, page 57, for more specifics.

More Information on Waterborne Pathogens₂

E. coli is used as an indicator for other pathogens that may pose more serious health risks. A pathogen is an organism that causes disease. Pathogens include other types of bacteria as well as parasites and viruses.

Here are some names that are familiar to the public: *Salmonella*, another well-known type of disease-causing bacteria, is found in the intestinal tracts of animals and humans, as well as in contaminated water. *Cryptosporidium* and *Giardia* are parasites found in contaminated water that pose health risks to humans. Among the disease-causing viruses that can be found in water are adenoviruses, that can cause respiratory illness, and rotaviruses, whose effects on the human system are often mistaken for “stomach flu” but can cause very serious cases of diarrhea.

Enteric pathogens—that means pathogens that infect the gastrointestinal tract—are contracted via ingestion of fluids or materials that are contaminated with fecal matter. The primary symptoms of enteric pathogen infection include nausea, vomiting, diarrhea and fever. The pathogens may spread to other areas of the body, including the blood, liver or nervous system.

The waterborne pathogens that scientists believe are most likely to cause disease in humans from exposure during recreation include *Norovirus*, rotavirus, adenovirus, *Giardia lamblia*, *Campylobacter jejuni*, *Cryptosporidium* spp. and *Salmonella enterica*.

E. coli is used as the indicator pathogen in surface-water quality

2. J. A. Soller, T. Bartrand, N. J. Ashbolt, J. E. Ravenscroft, T. J. Wade, Estimating the primary etiologic agents in recreational freshwaters impacted by human sources of faecal contamination, *Water Research* 44 (2010) pp 4736-44747; P. Standish-Lee and E. Loboshevshy, Protecting public health from the impact of body contact recreation, *Water Science and Technology* Vol 53 No 10 pp 201-207; J. A. Soller, M. E. Schoen, T. Bartrand, J. E. Ravenscroft, N. J. Ashbolt, Estimated human health risks from exposure to recreational waters impacted by human and non-human sources of faecal contamination, *Water Research* 44 (2010) pp 4674-4891.



*Damage to streambanks does more harm to water quality than most people would imagine. This affects both wildlife and humans.
Gila Watershed Partnership*



*Carried by heavy rains down Ward Canyon in Clifton to the San Francisco River, September 29, 2010.
Walter Mares, The Copper Era*

research because testing for other pathogens is more complex and expensive. Few laboratories have the capacity to test for other pathogens, and analysis can be very complex and time-consuming and therefore costly.

According to the standards of the Arizona Department of Environmental Quality, at certain times it may be unsafe to have “full-body contact” with the river water. Full-body contact refers to swimming, splashing or floating in the water. Boating can also lead to full-body contact, whether intentional or not.

E. coli and Other Pathogens in the San Francisco River

Exceedance is a scientific term that is used when a water sample shows a concentration of a contaminant that exceeds the safety standard agreed upon by the US Environmental Protection Agency and the Arizona Department of Environmental Quality.

The Gila Watershed Partnership, a nonprofit organization focused on river issues in Graham and Greenlee Counties, has worked with the Arizona Department of Environmental Quality since 2009 to determine the sources of *E. coli* exceedances that have occurred in the San Francisco and Blue Rivers. As of this writing, what is known for sure is that when the warm weather starts on the San Francisco, fecal matter that is left uncovered near the river is washed into the water by heavy rains. When overland runoff carries feces into the water, the data gathered indicate that *E. coli* numbers rise sharply, sometimes greatly exceeding safe levels. This, as we have explained above, means that there are likely to be higher concentrations of other pathogens in the water as well.

Many people assume that once the river has been scoured by big rains, it is safe to go into the water again. But research completed by the Gila Watershed Partnership proves other-

wise. More than two weeks after a big flush from heavy rains, *E. coli* levels are still far above the safety threshold for full-body contact.

No one knows how long *E. coli* and other pathogens can survive in the water outside of the warm, protected environment of an intestinal tract. Scientists are surprised again and again to see *E. coli* showing up in water samples under conditions that are believed to be inhospitable.

It is certain that when the weather and the water start warming up, *E. coli* survive much more easily in the environment. If there is suspended sediment in the stream—muddied water from rains or from vehicles, animals or people stirring up the stream bed or eroding the banks—*E. coli* bacteria attach to and can be carried by those sediments. In other words, muddy water can allow them to survive even better.

Of course, all warm-blooded wildlife have *E. coli* and other pathogens in their intestines and disperse them into the environment all the time. The Arizona Department of Environmental Quality is not concerned with removing wildlife from our rivers—only with studying the contributions from humans and livestock and helping communities determine and take appropriate actions based on solid scientific research.

What About the Cows?

There are areas all up and down the San Francisco River that have been grazed and in some cases overgrazed. Cattle and other livestock have been a fact of life on the Frisco since the late 1880s. Cattle feces are not the only concern for public health professionals. Too many cattle watering at the river can lead to increased sedimentation of the water, as the big animals' hooves break down soils at the stream edges. Increased sedimentation leads to a number of imbalances that affect aquatic life, and it can increase the concentration of pathogens too.

There certainly are cattle in the area of the San Francisco River today and, in most cases, they are there legally. Under its program with Arizona Department of Environmental Quality, the Gila Watershed Partnership has been testing to see if cattle are contributing to the *E. coli* exceedances—the warm-weather events when the *E. coli* numbers become dangerous for full-body contact (by us humans).

Some stakeholders have been working together to develop a different way of managing cattle ranching on the Frisco that reduces whatever contribution those cows may be making to pathogen loads in the water.

What About Run-off from Mining?

Many people look at the handful of small mining operations still active in the watershed and wonder whether any toxins are entering the stream as a result. Those operations, like the massive one just over the mountain at Morenci, are monitored for Clean Water Act compliance by the US Environmental Protection Agency and the Arizona Department of Environmental Quality. There should not be significant contaminants entering the San Francisco River from any of the mining operations in the watershed.



— BE AWARE: HIGH WATER —

Everyone knows that the San Francisco River floods from time to time, like most rivers in the Southwest. High water is a natural phenomenon that can be made worse by forest and range fires, drought and land uses that cause bank erosion, deforestation and loss of smaller vegetation.

The important thing to know while visiting the Frisco is that although high water is most likely to occur during the summer monsoons or winter rains, it can happen at any time of year. The great flood of 1983 that destroyed whole sections of Clifton began on October 1st, well after the summer monsoon season.

High water can come suddenly, even when there is no rain in the immediate area. Rain in the mountains upstream, especially warm, spring rain that melts snowpack, can send a wall of water rushing down into southern Greenlee County while Clifton sits under placid blue skies.

For this reason, it's smart to check the weather forecast for the Alpine, Arizona, area before heading to the Frisco. Calculate carefully—if big water heads downstream, you can get trapped in the lower Frisco.

Familiarize yourself well with the following potential situations:

Do not get trapped in a canyon when there is a possibility of high water. Crossings will quickly disappear in high water, so escape from a canyon may become impossible.

Be extremely careful about crossing the river on foot in rising waters. If you feel that the current of the stream is strong enough to pull you down, it most certainly could. Use a heavy stick to help with balance.

Do not drive through a crossing when the water is rising. Move your vehicle to the highest possible place and do not stay in it if the water rises to the level of the bottom of the vehicle. There are frequent instances in our region of cars and trucks being carried downstream. Climb to a higher point outside your vehicle and wait until the water has receded before returning to it.

Be patient about driving out again—many vehicles are wrecked by driving across a wash too soon after a big rain. Get out of your vehicle and check water depth at a crossing with a stick, all the way to the other bank, before driving across.

Be particularly careful at night when attempting to cross a high-water river on foot or in a vehicle. You cannot see the rising water after dark. In addition, evening thunderstorms dump most of their rain close to or after nightfall.

If you are pulled into the stream and cannot easily get to safety, float on your back with your feet pointed downstream. This allows you to see where the water is taking you and to use your arms to steer around dangerous objects like fallen trees or big rocks. Do not use up your energy fighting to get to shore! Let the water carry you and gently paddle toward the edges until you have an opportunity to grab on to something that is well anchored to the bank. If you are worried about family members or companions, keep repeating these same instructions to them. The face-up, feet-first position is also the safest for getting through sections of “white water.”

If you are trying to drive back to town in a high-water event, consider carefully before driving across running washes. They commonly look shallower than they really are.

Lightning is a common feature of big storms in Greenlee County. Danger from lightning is much greater if you are in the water. Do not take shelter under a large tree—those are likely to be struck. If possible, take shelter under a rock wall in an area that is not likely to flood.

There are no formal hiking trails along the San Francisco, but there are many places to hike along and above the river. Remember that there are no restroom facilities or potable water anywhere outside of Clifton, so be prepared.

Look at the land ownership maps at the back of this book. If you are on private lands or Arizona State Lands, you should have the landowner’s permission or a permit to hike. If you are on public lands managed by the US Bureau of Land Management or the Forest Service, be familiar with their guidelines and recommendations. Both have offices in the region with lots of free materials to help you prepare.

US Bureau of Land Management Safford Field Office

711 14th Avenue, Safford, AZ 85546

Phone: (928) 348-4400

Hours: 8:00 a.m. to 4:00 p.m., M-F

US Forest Service Clifton Ranger District

39720 AZ Highway 75

Near the junction with AZ Highways 191 and 78 (“Three-Way”)

Duncan, AZ 85534

Phone: (928) 687-8600 TTY: (928) 687-1807

Hours: 8:00 a.m. to 4:30 p.m., M-F

Arizona State Land Department

1616 West Adams Street, Phoenix, AZ 85007

Phone: (602) 542-2119

www.land.state.az.us

Hours: 8:00 a.m. to 5:00 p.m., M-F

North Clifton RV Park and Campground

380 Frisco Avenue, Clifton, AZ 85533

Phone: (928) 865-9064

Phone: (928) 292-0221

<http://users.aznexus.net/tocgov/>



Swimming

There are lovely swimming holes up and down the river, on both private and public lands. Enjoy, and keep the following warnings in mind:

People have been fishing in these places for more than a hundred years. We can suppose there are a lot of fishhooks snagged in trapped limbs or other debris underwater. Wear sneakers or river sandals, or at least be very careful of your feet.

The first rains of summer will carry fecal material into the river. While we work to try to get people to be more responsible with their toilet practices on the river, you should assume that levels of disease-causing pathogens in the river water are high during and after heavy rains. Field research on the San Francisco shows that it takes a few weeks for pathogens to return to safe levels after the initial “surface runoff” of the summer monsoons.³

Remember that fecal-oral transmission of disease-causing bacteria, viruses and parasites can happen with just a small amount of ingested water. The very young, the old and anyone with a compromised immune system are at greater risk. It's always a good idea to wash hands after contact with river water, especially before eating. But don't ever get soap into or near the water (see next page). Bringing hand sterilizer along is a simple solution.

3. The field research on the San Francisco River by Gila Watershed Partnership staff and volunteers will be released for public comment in the winter of 2012. Please contact the Gila Watershed Partnership if you are interested in being involved in the project. Go to the Contact page at www.gilawatershedpartnership.com.

Washing in the River?

Don't do it, not even with biodegradable soap, shampoo or dish detergent. All of these can kill the fish, frogs, turtles and microscopic life forms in the water. Do all your washing 200 feet from the water.

Boating

Much of the advice on the following pages comes from US Bureau of Land Management Ranger Rich Law, who patrols Bureau of Land Management-managed lands in Graham and Greenlee Counties. Rich has floated the rivers of the Upper Gila watershed many times. We've added a few bits of advice from other experienced floaters in the area.

The San Francisco River can be floated any time of year when the flow levels allow. Both minimum and maximum floatable levels depend on each individual boater's endurance and level of competence, type and durability of boats and equipment, and amount of time available for the trip. Successful floats have been made at flows as low as 30 cubic feet per second (cfs) and as high as 10,000 cfs. Low-flow trips take longer and are harder on people and equipment. Higher level floats are quicker and easier but may pose more danger.

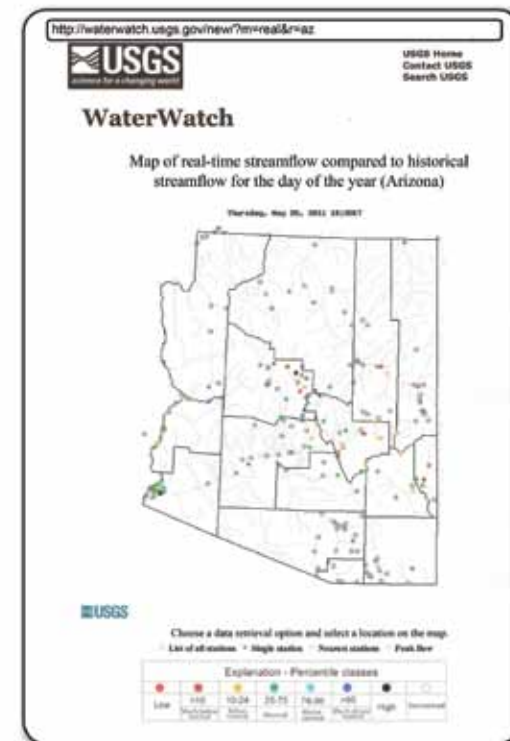
See below for the San Francisco River mean monthly streamflows in cubic feet per second (cfs), from statistics gathered between 1910 and 2005:

MONTH	MEAN CFS	MONTH	MEAN CFS
JANUARY	286	JULY	98
FEBRUARY	341	AUGUST	193
MARCH	435	SEPTEMBER	151
APRIL	323	OCTOBER	226
MAY	158	NOVEMBER	132
JUNE	56	DECEMBER	241

As you can see from the chart, water levels tend to be best for floating during the winter and early spring. The relatively high flows in August result from monsoon storm runoff. Monsoons are not guaranteed, but they can come on hard and fast, as can rains in any season. Review the "Be Aware" section of this book for more tips on planning for possible high waters.

For Safety, Check Streamflow Online Before You Leave

Real-time streamflows for the San Francisco River are available on the internet from the US Geological Survey at <http://waterwatch.usgs.gov/new/index.php>. Double-click on the Current Streamflow map, and when it comes up double-click on Arizona to see the screen illustrated here. Run your cursor over the colored dots in Greenlee County to see the current readings on the various river gauges.



Watercraft

Watercraft suitable for floating the San Francisco River at most water levels include very small rafts, inflatable kayaks and hard-shell, whitewater kayaks and canoes. Flat-water (sea) kayaks, fold boats and drift boats may be unsuitable, due to poor maneuverability, fragility or stream shallowness. At flows above 300 cfs, larger rafts are appropriate. At 500 cfs and above, very large rafts and drift boats may be OK. Visitors are discouraged from navigating these rivers on inner tubes and inflatable pool toys, as these vessels are deemed unreliable and, therefore, unsafe by river safety experts. As a point of information for the novice river float-boater: open, hard-shell canoes are the most difficult craft to navigate safely in moving water. This is especially true of tandem and heavily loaded canoes.

Safety and Equipment

Float-boating, desert trekking and camping, and back-country activities in general all involve a certain amount of risk. Research and pre-planning will help reduce these risks to the minimum. Carefully reading and following the safety suggestions in this section are the first steps in insuring a safe river trip.

Be constantly alert for hazards whenever flows are higher and faster. Big rocks, fallen trees and the occasional floating log can suddenly be yours to deal with even as you paddle your hardest to avoid them. There are multiple types of boulder traps in high water. Make sure your companions' skills and your own add up to a reasonable level of risk.

One gallon of drinking water per person per day is the minimum that should be carried by any desert traveler at any time of the year. Even more water may be needed in case of strenuous activities or unplanned delays. During the summer months especially, it would be wise to carry as much water as possible.

Before it is safe for consumption, drinking water from the rivers and side streams must be boiled, filtered or treated with purifying chemicals.

Float-boaters must always wear an appropriate, well-fitted and maintained, snugly secured personal flotation device or life jacket whenever on the water. Other equipment you will need to safely float includes: appropriate first-aid and patch kits, a manual air pump (for inflatable craft), extra oars and/or paddles, and extra life jackets.

Be sure to bring appropriate attire including multiple layers of warm, synthetic or wool clothing for use in the winter. Nights in the spring and fall as well as during summer monsoons can be quite cool, so plan your wardrobe accordingly. A broad-brimmed hat, sun glasses, sunscreen and rain gear may be necessary year-round. Sturdy footwear is a must for serious side canyon exploration. A flashlight is a good thing to have in case of unexpected night maneuvers and to check the dark for snakes and other uninvited animal guests.

It's always best to travel with others. If you must travel alone, be sure and let someone know where you are going and when you plan to return.

Don't camp in a wash during the monsoon season (late June through September), and if there is the chance of flash flooding, camp where you can easily get to high ground, even in the dark. Remember to tie up your boat(s) at night and whenever no one is present to monitor them. Remain aware of environmental hazards such as poisonous plants and animals, steep, slippery and unstable slopes, rock-fall hazards, weather conditions and fluctuating water levels.

Although their effectiveness may be limited in the canyons, cell phones work along some parts of the San Francisco. Carry one for safety, if you have one, but try to be conscientious about its use. Some folks may be in the wilderness to get away from cell phones.

Boating Etiquette

The use of motorized vehicles off of designated routes is not allowed. Motor vehicles damage plants and the soil they grow in, foul the air and water, and disturb wildlife and the concentration of other visitors. Please show your consideration for the resources and for your fellow visitors.

Leave as little sign of your visit as you can. Carry out all trash, including anything left by other visitors not as careful as you.

If you can, bring a camp latrine along and take all human waste and toilet paper with you when you go. If you don't have a toilet, get 200 feet away from the river if possible (and away from any other heavily visited area), dig a shallow (6-8 inches) hole and cover the site with soil. Do not burn or bury toilet paper on site; pack it out.

Access

The Town of Clifton welcomes floaters to put in to the San Francisco River at the end of the road leading to the waste treatment plant just off of Highway 191 south of Clifton, near the Sheriff's Department complex. This is an ideal put-in for a trip down to the confluence with the Gila River and on through the spectacularly beautiful Gila Box Canyon to the Dry Canyon picnic area and boat take-out.

The dirt road to the put-in in Clifton is steep and may require all-wheel or four-wheel drive vehicles, depending on the season and recent maintenance.

Plan well—don't get caught in the dark and cold unless that's what you had in mind!

When the river is flowing at least 80 cfs, you can also float from the access on State Lands down into Clifton in a few hours time. Bear in mind that Arizona State Lands regulations require permits for all recreational activities, including boating.

The only designated camping area on the San Francisco River that has restroom facilities nearby is at the north end of the North Clifton RV Park. All other camping areas are “dispersed”—they are undeveloped and lack facilities, including potable water. To avoid creating unpleasant or hazardous conditions when camping, prepare well.

First, know where you are when you camp! Look at the maps in the back of this book. If you are on private lands or Arizona State Lands, you should have the landowner's permission or a permit to camp. If you are on public lands managed by the Bureau of Land Management or the Forest Service, be familiar with their guidelines for dispersed camping in undeveloped areas. Both have offices in the region with lots of free materials to help you prepare.

US Bureau of Land Management Safford Field Office

711 14th Avenue, Safford, AZ 85546

Phone: (928) 348-4400

Hours: 8:00 a.m. to 4:00 p.m., M-F

US Forest Service Clifton Ranger District

39720 AZ Highway 75 Near the junction with AZ Highways

191 and 78 (“Three-Way”), Duncan, AZ 85534

Phone: (928) 687-8600 TTY: (928) 687-1807

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*Hole in the Rock Pool
Gila Watershed Partnership*

Tread Lightly!'s Tips for Responsible Camping

The organization Tread Lightly! has developed a useful list of what to do and what to avoid when setting up on the San Francisco River in “dispersed” camping areas like those managed by the Bureau of Land Management and Forest Service.

Top 10 Ways to Minimize Impact When Camping in the Outdoors

1. Whenever possible, use existing campsites. Camp on durable surfaces and place tents on a non-vegetated area. Do not dig trenches around tents.
2. Camp a least 200 feet from water, trails and other campsites.
3. Pack out what you pack in. Carry a trash bag and pick up litter left by others.
4. Repackage snacks and food in baggies. This reduces weight and the amount of trash to carry out.
5. For cooking, consider using a camp stove instead of a campfire. Camp stoves leave less of an impact on the land.
6. Observe all fire restrictions. If you must build a fire, use existing fire rings, build a mound fire or use a fire pan. Use only fallen timber for campfires. Do not cut standing trees. Clear a 10-foot-diameter area around the site by removing any grass, twigs, leaves and extra firewood. Also make sure there aren't any tree limbs or flammable objects hanging overhead.
7. Allow the wood to burn down to a fine ash, if possible. Pour water on the fire and drown all embers until the hissing sound stops. Stir the campfire ashes and embers until

— OFF-HIGHWAY VEHICLE USE —

everything is wet and cold to the touch. If you don't have water, use dirt.

8. Detergents, toothpaste and soap harm fish and other aquatic life. Wash 200 feet away from streams and lakes. Scatter gray water so it filters through the soil.
9. In areas without toilets, use a portable latrine if possible, and pack out your waste. If you don't have a portable latrine, you may need to bury your waste. Human waste should be disposed of in a shallow hole six to eight inches deep at least 200 feet from water sources, campsites or trails. Cover and disguise the hole with natural materials. It is recommended to pack out your toilet paper. High-use areas may have other restrictions, so check with the land manager.
10. Following a trip, wash your gear and support vehicle to reduce the spread of invasive species.



“Summertime we stayed on the river. We’d swim, fish, camp and play. We’d get on burros and go up to the mouth of the Blue and spend a couple of weeks there. No bridles, no ropes, nothing but a willow twitch to guide a burro with. You just reach out and tap the burro on the head and he’d turn. We’d go up there and we didn’t take food. Of course there were some fruit trees there. Everyone was fishing and what you could catch was what you ate. When it got cool in the evening you’d just push a little place out for a body and lay down in that soft sand. That sand would be warm up until three or four o’clock in the morning before it’d finally cool off.”

—Johnny McBride
From an interview for the Arizona Memory Project

The San Francisco riparian corridor has long been a highway, the means by which pioneer ranchers and miners traveled on horses and mules and in wagons. Such use in the early days of settlement didn't have major impacts on the health of the river and its banks.

The popularity of off-highway vehicles and the resultant increase in traffic around the rivers have changed the picture. The public lands management agencies—both the US Bureau of Land Management and the US Forest Service—are scrutinizing “travel management” realities. The Bureau of Land Management wants off-highway vehicle riders to know the following about riding on its lands:

1. It is prohibited to operate an off-highway vehicle in violation of State laws and regulations related to use, standards, registration, operation and inspection.
2. No person may operate an off-highway vehicle on public lands without a valid State operator's license or learner's permit, where required by State or Federal laws.
3. No person shall operate an off-highway vehicle in a reckless or careless manner, or in a manner causing, or likely to cause, significant undue damage to or disturbance of the soil, wildlife, wildlife habitat, improvements, cultural or vegetative resources, or other authorized uses of public lands.
4. Drivers of off-highway vehicles shall yield the right-of-way to pedestrians, saddle horses, pack trains and animal-drawn vehicles.

The Bureau of Land Management also warns that off-highway vehicle travel is limited to roads and trails that existed at the time of the development of the Resource Management Plan

in 1991. Check with the Bureau of Land Management office to make sure you know what those roads and trails are in the area where you will be riding.

Off-highway vehicle organizations are fighting to keep federal lands open for use across our state. The Arizona Off-Highway Vehicle Coalition repeats the same message that local groups have been spreading around the San Francisco watershed for years: “Pack it in, pack it out. Keep it clean to keep it open.” The message doesn’t change; it says it all.

Off-highway vehicle organizations are a major source of volunteers, trail signage and area clean-ups for Federal, State and local land management agencies. Many of the regular off-highway riders who come to the San Francisco River make a point of leaving with a bag of trash that they didn’t bring in. It’s a good practice and a good example for others.

Crossing the River on an Off-highway Vehicle

Some off-highway riders don’t realize how much harm can befall an entire river ecosystem when banks are damaged by the tires and weight of vehicles. Bank destabilization leads to sedimentation, when the soils at the river’s edges get broken down and churned into the water by passing wheels. These suspended sediments block sunlight and cause imbalances in the water that can kill aquatic life.

You’re in Cattle Country

Much of the San Francisco River watershed is livestock range. Be sure to leave any gate you pass through as you found it. Drive with great caution around cattle and horses, especially if the horses are carrying riders.

Be Considerate of Others

Don’t forget that some of the people out on the river have traveled there in search of peace and quiet. Keep your trips through camping areas to a minimum and drive slowly to minimize noise and dust. Don’t play loud music on your

vehicle’s sound system—anyone who came out to hear birds sing or catch sight of deer or Bighorn sheep is going to be very disappointed when the wild critters are all driven off by your sub-woofer.

Local Land Agency Contacts:

US Bureau of Land Management Safford Field Office

711 14th Avenue

Safford, AZ 85546

Phone: (928) 348-4400

Hours: 8:00 a.m. to 4:00 p.m., M-F

At this writing, the Forest Service is finalizing a new travel management plan for the Apache-Sitgreaves National Forest, that will govern off-highway vehicle use on the upper San Francisco and the Blue Rivers.

US Forest Service Clifton Ranger District

39720 AZ Highway 75

Duncan, AZ 85534

Phone: (928) 687-8600

TTY: (928) 687-1807

Hours: 8:00 a.m. to 4:30 p.m., M-F



Fishing on the Frisco is a great pleasure. Here are some tips to help keep it that way.

Remember that the San Francisco is home to some threatened and endangered aquatic species: Gila chub, Gila trout, Loach minnow, Spikedace and Gila topminnow.

The introduction, spread, and establishment of non-native fish species is one of the principal reasons that native fish species are threatened and endangered in the San Francisco and Blue Rivers. Often anglers are to blame, because they bring in non-native species as bait, or release non-native fish that they want to propagate in the wild and later catch. The non-native fish threatening the San Francisco River today, by eating native fish or their eggs or by competing for food supplies, include the Red shiner, Fathead minnow, Common carp, Western mosquitofish, Channel catfish, Flathead catfish, Smallmouth bass and Green sunfish.

Other non-natives that are extremely harmful to native fish include crayfish, Texas spiny softshell turtle and the American bullfrog.

Other Hazards to Fisheries Health

You should do everything you can to not add any contaminants or objects to the water that could harm the San Francisco's fisheries. That includes solid trash that can blow into the water or be washed in by a heavy rain.

Pack out everything you packed in!

The rules for shooting and hunting vary depending on where you are along the San Francisco River. Use the maps at the back of this guidebook and familiarize yourself with this chapter.

Within Town of Clifton Limits

It is generally illegal to discharge a firearm within or into the limits of any municipality in Arizona. However, this prohibition does not apply to persons discharging firearms in the following circumstances:

- On a properly supervised range.
- In an area recommended as a hunting area by the Arizona game and fish department, approved and posted as required by the chief of police. (Any such area may be closed when deemed unsafe by the chief of police or the director of the Arizona game and fish department.)
- For the control of nuisance wildlife by permit from the Arizona Game and Fish Department or the United States Fish and Wildlife Service.
- By special permit of the chief of police of the municipality.
- As required by an animal control officer in the performance of duties.
- Firing blank cartridges.
- More than one mile (1.6 km) from any occupied structure.
- In self-defense, or defense of another person against an animal attack if a reasonable person would believe deadly physical force against the animal is immediately necessary and reasonable under the circumstances to protect a person from harm.

- In self-defense or, in defense of another person against a criminal attack as permitted by the laws regarding defensive use of force.

While discharging a firearm using blanks within the limits of a municipality is not expressly prohibited by law, disturbing the peace or other charges could still apply.

On Private Property

Be sure to get the permission from the landowner before hunting. Pick up all your spent cartridges and don't leave any other trash behind.

On Arizona State Land Trust Lands

It is illegal to discharge a firearm on State Trust Land, except pursuant to lawful and licensed hunting.

On Bureau of Land Management Lands

The US Bureau of Land Management allows shooting and possession and use of firearms on its lands provided the specific shooting activity meets the following conditions:

- It does not create a public hazard, public nuisance or direct threat to public safety and use.
- It does not damage or destroy natural features, native plants, cultural resources, historic structures or government and/or private property.
- It does not facilitate and create a condition of littering, refuse accumulation and abandoned personal property.
- It does not violate an existing use restriction, closure order or supplementary rules notice.

On Forest Service Lands

The US Forest Service allows shooting on National Forest System Land provided the specific shooting activity meets the following conditions:

- It does not create a public hazard or serve as a direct threat to public safety.
- It does not damage or destroy natural features such as plants, historic features or property.
- It does not create litter, refuse accumulation and abandoned personal property.
- It does not violate an existing restriction or closure.

The Forest Service prohibits discharging a firearm or any other implement capable of taking human life, causing injury or damaging property as follows:

- In or within 150 yards of a residence, building, campsite, developed recreation site or occupied area.
- Across or on a National Forest System road or a body of water adjacent thereto, or in any manner or place whereby any person or property is exposed to injury or damage as a result in such discharge.
- Into or within any cave.

Regulations for shooting in the National Forest come from Code of Federal Regulations 36 CFR 261.10.

Except for the North Clifton RV Park, the popular recreation areas on the San Francisco River have no toilet facilities.

At the October 2010 Friends of the Frisco river clean-up, one old-timer put it this way, “When we used to go out on the river with the Boy Scouts, we all knew how to dig a hole away from the water and cover it up. It seems like nobody knows how to do that anymore. What is the matter with people?”

Is there something wrong with people who leave their feces and toilet paper exposed near the water, to be washed in with the next big rain? Of course not. They probably would be happy to use facilities if any were available. But since that is not the case, there are some things that visitors to the river should be thinking about.

Here are some common beliefs the Gila Watershed Partnership group have gathered from the community, followed by responses we developed after our intensive review of recent literature and scientific journals, interaction with local professionals and the scientific community, and advisement of Arizona Department of Environmental Quality staff, University of Arizona graduate students as well as Dr. Channah Rock, Water Quality Specialist/Assistant Professor at the University of Arizona.

Human waste is a natural material that will quickly be absorbed into the environment. Toilet paper breaks down quickly too. So what’s the problem?

Of course it’s true that human waste is a natural material. But there are diseases that are passed among people by unintentional oral contact with microscopic amounts of fecal matter. Some of those diseases can be permanently disabling and even fatal. This is why there are strict laws about handwashing in

food and grocery establishments. The same pathogens health officials are concerned about in restaurant toilets also get left behind at open toilets near swimming areas.

When feces, used toilet paper or dirty diapers are washed into the river by rains and high waters, whatever disease-causing pathogens that are in the feces may transport to the water also. If the water is muddy, or turbid, there is more material for the pathogens to attach to. They can stay with mud particles and other material wherever it settles.

Pathogens and other bacteria can survive in both cold and warm temperatures in the environment including rivers, lakes, streams, and soil.

Everybody knows that the river cleans itself – the big rains scour it clean every year. All that material gets taken care of in a natural process.

It’s not so simple. The pathogens that are introduced into the water by heavy rains and “surface flow” may not be washed away immediately. When the Gila Watershed Partnership tested San Francisco River water a few weeks after major summer storms, the *E. coli* numbers were still above the safety level established by the Arizona Department of Environmental Quality. The numbers didn’t go down again until later in the season.

That also means that there may be other types of pathogens—other bacteria as well as viruses and parasites—in the water along with the *E. coli*. *E. coli* tests are used as an indicator for other kinds of pathogens that can make people sick.

And think about it – what if your favorite swimming beach or your cornfield or your secret fishing hole was somewhere way downstream? How would you feel about all that stuff floating your way?

I've been swimming in the river for years and I've never gotten sick. I've never heard of anyone getting sick from the river. Why does anyone think there is a problem?

Scientists who study diseases caused by waterborne pathogens tell us that most of the illness caused by these pathogens never gets reported to health authorities. That may be because most people may think it isn't serious to get a bout of diarrhea and the symptoms likely go away in a few days. A person may take an anti-diarrheal or a pain-killer, or just wait it out. That "stomach flu" or "reaction to something" you had last summer might have started with some unintentional ingestion of contaminated water.

One older cattleman in our area was overheard saying, "I've drunk from the river every day of my life and I've never been sick." Then, with a chuckle, he added, "But I do have diarrhea almost every day!" That was meant to get a laugh, but diarrhea can and does kill.

State and federal health authorities have risk assessment models that quantify the chances people will get sick from accidental oral ingestion of contaminated water while swimming. Their goal is to identify and solve problems before there are adverse health effects.

I don't like having outside authorities telling us what we can and can't do on the river. It has always been our place. What if they decide to shut it down?

Both the US Environmental Protection Agency and the Arizona Department of Environmental Quality are going to pay attention to our water quality, whether we like it or not. But they are doing something now that we should not overlook: they are making it possible for communities to investigate and solve their pollution issues with the support of government funding.

That is what is happening now on the San Francisco and Blue Rivers. This book is a product of an investigation conducted

by people who live and work in Greenlee County and who want the river to remain a place for public enjoyment. If you want to be involved, get in touch with the Gila Watershed Partnership. See the "contact us" page at www.gilawatershed-partnership.com.

So what should we do about human waste while recreating on the river?

Best option—bring a portable camp latrine, lined with a plastic bag that you seal up (put an extra bag around it), take home with you and dispose of properly. A simple five-gallon bucket with a kitchen bag liner and a lid works fine. Or you can spend a few bucks on a snap-on toilet seat lid made for a five-gallon bucket. If you want to get fancier, there are inflatable camp latrines and composting camp latrines on the market. They aren't terribly expensive.

Next best option—dig a proper "cat latrine" and back-fill when you are finished with your business, just like the Boy Scouts always have done. Here are the rules for cat latrines:

- Be at least 200 feet from any water source.
- Dig a hole 6-8 inches deep, for each use.
- Back-fill the hole with dirt when you are done.
- Cover the area with twigs, leaves or other debris natural to the area.
- Your trowel or shovel should not touch human waste.
- It is best if toilet paper can be packed out.

Toilet paper is slow to decompose and can be dug up by animals. It usually won't burn completely and burning it can be dangerous. Get biodegradable toilet paper if you are going to bury it with waste in the hole.

Remember, it doesn't do any good if you don't cover it up!

Just plain DON'T leave open toilet areas for other people to

stumble across, for wildlife to get into and for rain to wash into the river. It's disgusting for your fellow campers to see it makes camping areas smell bad, and it endangers the health of others.

Here's a statement on camp toilets by Friends of the Frisco, that they adapted with permission from Hit the Trail: Phantom Ranch, Grand Canyon and the Southwest, www.hitthetrail.com.

Backcountry Etiquette

You are out on the beautiful San Francisco River, the sound of birds brightening the day, when you find the perfect campsite. It's ideal, with all of the things you look for to make it just right: level ground, a fabulous view and rocks that you can sit on and set your kitchen up. Everything seems perfect and you start pitching your tent. You look around for a rock with which to drive the tent stakes into the ground and spot one nearby. Then one of the most disgusting things you have ever seen is waiting underneath that rock—human waste and toilet paper are squished beneath. All of sudden your perfect campsite doesn't seem so idyllic anymore!

Unfortunately, the above scenario happens on a regular basis—unbelievable as it may seem to some. So in this section we will discuss “backcountry etiquette.”

In wilderness areas, many popular camping sites will have some sort of toilet nearby. By all means, use it. It may seem inconvenient to walk to in the middle of the night, especially just for urinating. But if you think about it, what would the area smell like if everyone used the camping area as a urinal? Even though some backcountry toilets are pretty disgusting, they beat experiencing the scenario described above. The purpose of these toilets is to contain the waste in as small an area as possible and to prevent spreading disease.

When you're not in an area that provides toilets, be sure to

follow the proper method of waste disposal. Always, always, always make sure you are at least 200 feet away from any water source. This includes watercourses that are usually dry—a common thing in the Southwest. The next rainstorm could turn this dry gully into a raging river. Sometimes it's hard for people to accurately guess how far 200 feet is, so use the following image to help figure out the proper distance. In town, a small house lot is about fifty feet wide. Walk at least the distance of four lots away from the water source. Never use an area that may be used as a campsite or kitchen area by others in the future. Use the same guidelines concerning distance for urinating or dumping out wash water.

Dig a hole about six to eight inches deep, commonly called a “cat-hole” or “cat latrine.” Do your business, cover the feces with soil removed from the hole and return the appearance of the area to normal as much as possible. The reason for using a shallow hole is because soil is biologically active within the top six inches. Naturally occurring bacteria assist in breaking down the feces into humus, a rich soil. If you dig too deep, decomposition will not occur; if you don't dig deep enough, animals could expose the feces, possibly spreading disease. Pack out—do not burn or bury—your toilet paper.

We cannot emphasize the importance of the last statement enough. We've heard stories from folks who had either buried or burned their toilet paper and ended up with nasty endings. Like the people who burned their toilet paper and lost control of the flame, causing a lot of damage to the fragile desert environment. Don't think it can't happen to you.



— RIVER TRIP CHECKLIST —

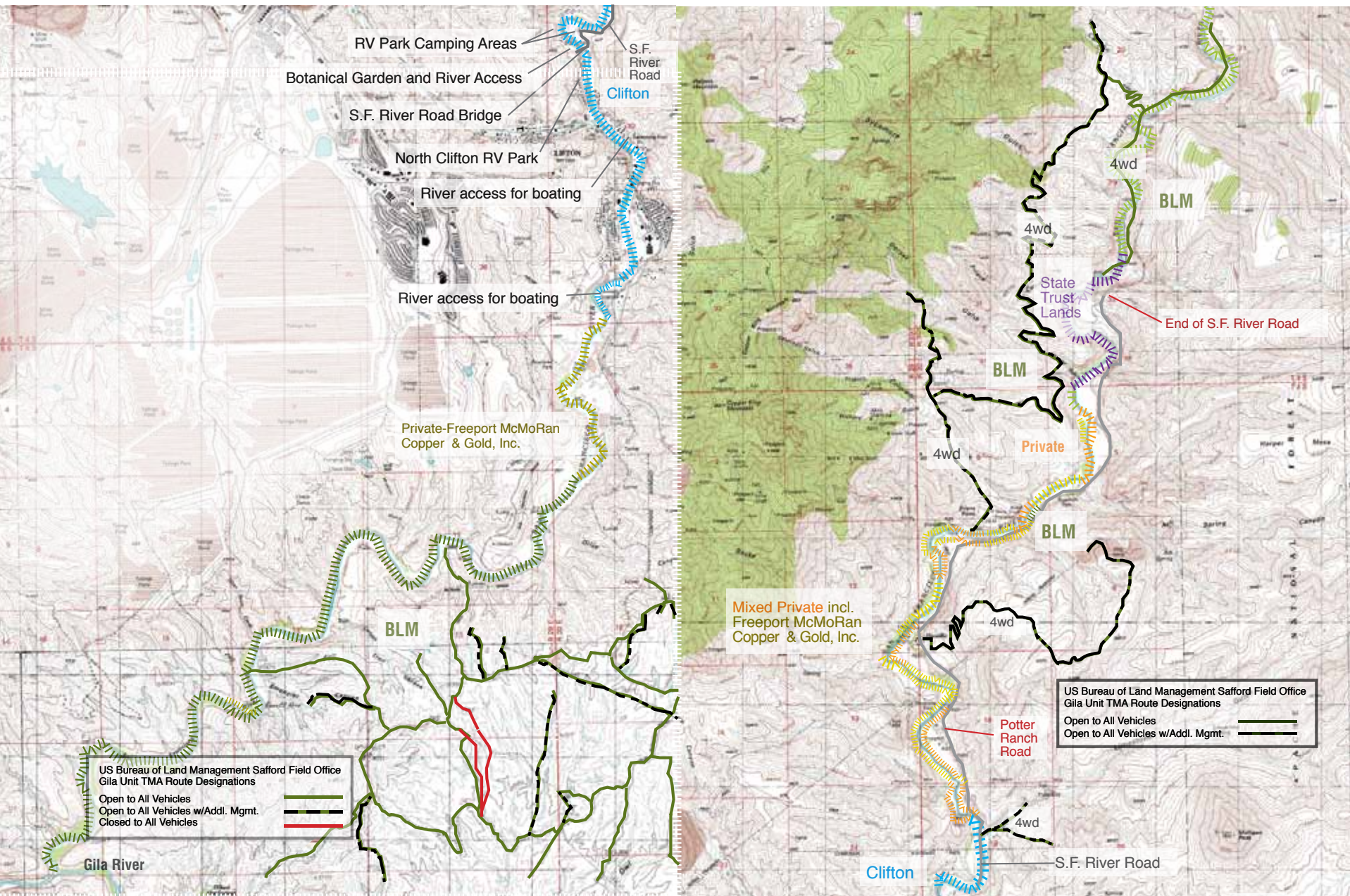
*Compiled in consultation with Sonja and Mike Watkins,
Greenlee County Sheriff's Posse*

The San Francisco River is mostly a wild area of rough terrain, sudden changes in weather and temperature extremes. To avoid being caught unprepared, use the following check-list to make sure you cover the bases in staying safe on your trip:

- _____ Tell someone where you're going and when you expect to return
- _____ Plenty of drinking water
- _____ First-aid kit
- _____ Make sure vehicle has plenty of fuel
- _____ Tools/jack for the vehicle and good spare tire
- _____ Tow rope/chain/cable
- _____ Map of the area if not familiar with where you are going/compass/GPS unit
- _____ Cell phone/radio
- _____ Flashlight with extra batteries
- _____ Matches in a waterproof container
- _____ Food
- _____ Knife
- _____ Medications
- _____ Hand sanitizer
- _____ Any other personal-need items you wish

Check the weather forecast before you set out, and while you're at it, check the weather in Alpine, Arizona, too. Rains in the headwaters region can become high water downstream in a matter of hours, even when there isn't a cloud in the sky locally.

To see how the river is flowing, go to the US Geological Survey site for surface water: <http://waterwatch.usgs.gov/new/index.php> and double-click on Arizona. When the Arizona map comes up, run your cursor over the colored dots in Greenlee County to see the current readings on the various river gauges. If you do this regularly, you'll soon know what to expect on the river based on what the gauges say. Just remember that there is no gauge upstream of Clifton on the San Francisco. The gauge at Clifton doesn't tell you anything about what might be coming down from the upper river in a matter of hours.

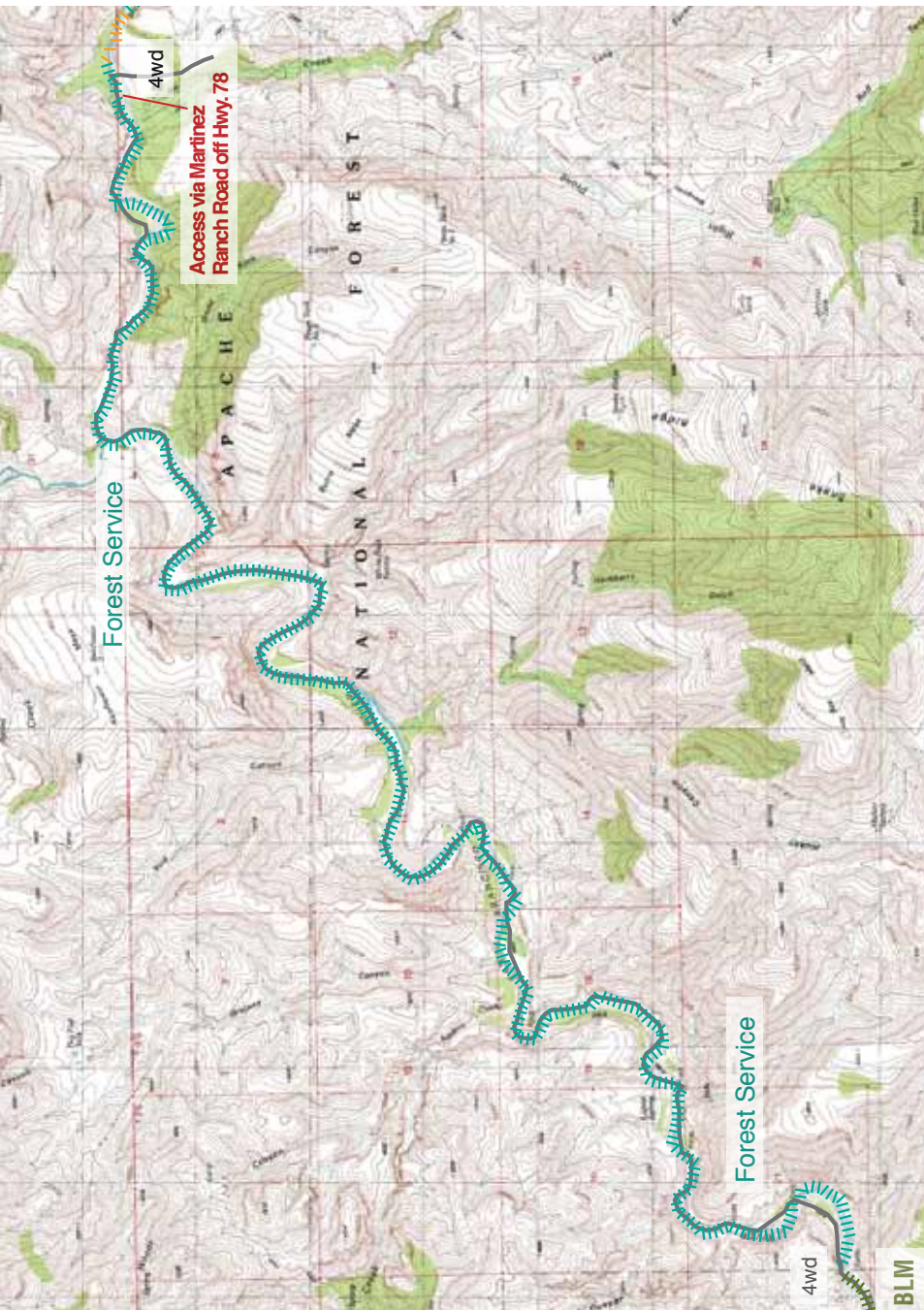


1. San Francisco River, Gila River to New Mexico



2. San Francisco River, Gila River to New Mexico





3. San Francisco River, Gila River to New Mexico



4. San Francisco River, Gila River to New Mexico



Emergency Contacts

Cell phone reception is spotty along the river. If you don't have reception, keep moving until you find a spot. Some reception areas are in surprising places. If you have an emergency, your cell phone provider's 911 service will contact local authorities. Be prepared to give a good description of where you are. Think, as you approach your destination, how you would describe it to a 911 operator if something happened. Don't count on your cell phone's GPS to work in a river canyon.

Greenlee County Sheriff

911 for emergencies
824 S. Coronado Blvd.
Clifton, Arizona
(928) 865-4149

Clifton Police Department

520 N. Coronado Blvd
Clifton, Arizona
(928) 865-2555

Gila Health Resources

Urgent Care
401 Burro Alley
Morenci, Arizona
928-865-9184

Call 911 in an emergency

To report health hazards observed
in or near the river:

Greenlee County Government Health & County Services

253 Fifth St.
Clifton, Arizona
(928) 865-2601

To report problems with wildlife:
Steve Najar

**Arizona Game
and Fish Department**
(928) 687-2454

To report problems with
domestic animals:

**Greenlee County Animal
Control Office**
840 S. Coronado Boulevard
Clifton, Arizona
(928) 865-2720

Business hours: 7:00 a.m. to
3:00 p.m., M-F

After hours:

Greenlee County Sheriff
(928) 865-4149

Within Town of Clifton limits:
Clifton Police Department
(928) 865-2555