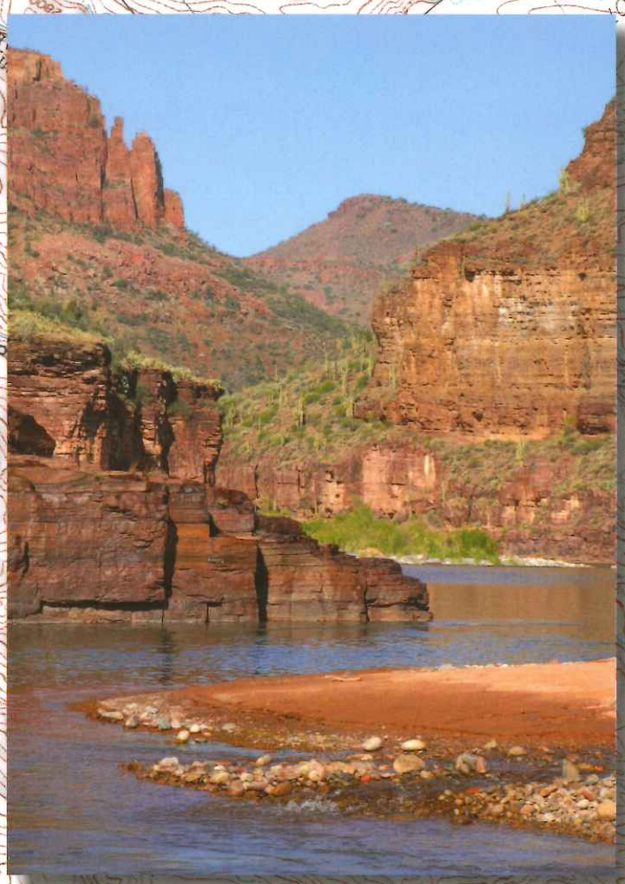
199

RiverMaps™

Guide to the Upper Salt River, Arizona



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and
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General Information

Just a short two and one-half hour drive from central Phoenix is a special river that relatively few boaters get to enjoy, mainly due to its short unpredictable season. The upper Salt River is known for its challenging whitewater, Sonoran desert flora and fauna, and stunning geology. Located north of Globe, Arizona, the section of river described in this guidebook flows through more than 52 miles of canyon scenery with elevations ranging from 2,200 feet near the take-out at State Highway 288 to more than 5,400 feet in the high parts of the canyon near the put-in at U.S. Highway 60. With an average gradient of almost 22 feet per mile, the river tumbles through 33 named rapids, many of which are rated class III or IV. Much of the river is encompassed by the 32,100-acre Salt River Canyon Wilderness on one or both sides.

The river has its headwaters in the White Mountains of eastern Arizona. The White and Black rivers originate on the northwest and southeast slopes, respectively, of Baldy Peak, Arizona's second highest mountain at 11,403 feet. The two streams merge approximately 33 twisting river miles upstream from U.S. Highway 60 to form the Salt River. From the confluence, the river flows free for 93 miles before succumbing to the dead impoundment of Theodore Roosevelt Lake, part of the infrastructure that provides water to the Phoenix metropolitan area. What little water manages to pass through the series of impoundments and diversions below Theodore Roosevelt Dam flows through Phoenix to the Gila River and on to the lower Colorado River at Yuma, Arizona.

The boating season for the Salt typically begins in early March and runs through April with anything from dangerously high water to rock-scraping low water possible. Suggested water levels based on the USGS Chrysotile gage near the put-in at U.S. Highway 60 are 1,200-3,000 cfs for rafts and at least 400 cfs for inflatable kayaks. Experienced boaters can run light rafts as low as 600 cfs and inflatable kayaks as low as 250 cfs, but rafts will be dodging and scraping rocks, and the portages for inflatable kayaks at Black Rock and Corkscrew are strenuous. Higher levels become increasingly hazardous.

The upper Salt River can be divided into two sections. The upper part from U.S. Highway 60 to Mile 9.3 is paralleled by a dirt road on river right with multiple access points to the river. This section is commonly run by commercial and private boaters as a day trip. The remainder of the river is typically run as a multi-day trip even though intermediate access points at Gleason Flat near river mile 19 can shorten the trip and do not require a Forest Service permit (more on this below). The complete run from U.S. Highway 60 to State Highway 288 is commonly run in three to five days depending on the water level and amount of day hiking your group chooses to do.

The upper Salt River through the Salt River Canyon Wilderness (river mile 19.3 to State Highway 288) is administered by the U.S. Forest Service (USFS), Tonto National Forest. USFS regulations require special recreation permits for private boaters taking river trips from March 1 through May 15, the prime boating season. Permits are issued through a lottery, and applications are taken on-line from November 15 through the close of business on January 31. The link to the lottery application and a list of current requirements can be found on the USFS website (a search for "Tonto National Forest Salt River" should allow you to find the website more easily than typing the very cumbersome URL, which is subject to change.) Cancelled permits are available on-line beginning on February 1. Refer to the USFS website for information on how the cancellation system works.

Tonto National Forest currently has the following river trip regulations:

- A boat tag must be attached to every watercraft used.
- Group size is limited to no more than fifteen people in the wilderness section (mile 19.6 to Highyway 288) and 25 people from Hoodoo River Access to Gleason Flat (mile 9.3 to mile 19.6). The day section is not limited (mile 0 to mile 9.3).
- Groups must have a fire pan in their possession. Self-supporting kayak trips must have a fire blanket or fire pan in their possession. All fires must be contained within these items.
- Wood collection is limited to dead and down material only. Cutting or stripping limbs from trees is strictly prohibited.
- All trips must possess a portable toilet system to collect all solid human waste for proper disposal at an appropriate waste facility. All solid human waste must be carried out of the river corridor.
- Motorized boats and equipment are prohibited within the Salt River Canyon Wilderness.
- Possession or transportation of any part of native plants is prohibited.
- Littering is strictly prohibited. Pack out all food remains, and trash.

The right side of the river upstream of U.S. Highway 60 to river mile 29.0 is within the White Mountain Apache Tribal Lands. Recreation permits issued by the White Mountain Apache Tribe (WMAT) are required for whitewater boaters utilizing the portion of river flowing through the reservation. Whitewater boating is prohibited by the tribe upstream from the U.S. Highway 60 bridge. During the spring boating season, a self-serve permit kiosk is located next to the access road between the Highway 60 bridge and the put-in, and permits are $20 per person for each day you are within reservation lands. You can also call the tribal recreation office at 928-338-4385 or purchase your permit on-line. WMAT boating regulations are similar to USFS regulations, but no boat tag is required.

Black Rock Rapid at 600 cfs.

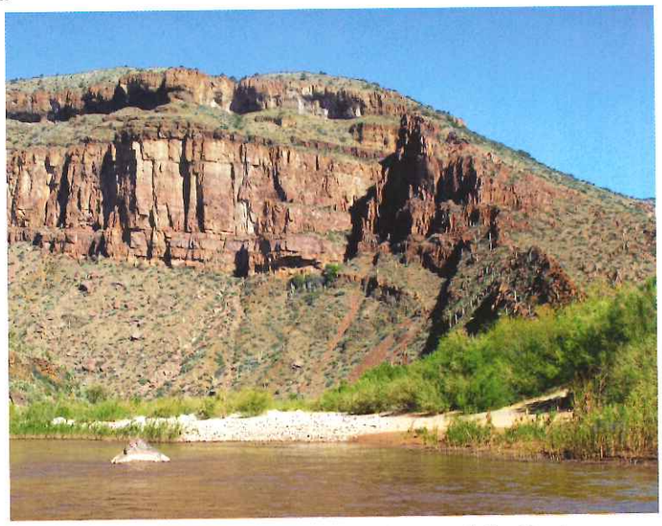
The usual put-in and take-out are easily accessed from U.S. Highway 60 and State Highway 288, respectively. The White Mountain Apache Tribe has several campgrounds along the first nine miles of the

river if you wish to camp before you launch, but be sure to include your pre-launch day in your WMAT permit. All of the WMAT launch points are unimproved and require a bit of gear and boat hauling. Portable toilets are available at the put-in (mile 0) during the spring boating season, but bring your own drinking water and plan to haul your trash. Note that separate launch areas are provided for private and commercial boaters at river mile 0. The take-out at Highway 288 has a wide concrete ramp that was extended to the low-water line in 2013. A vault toilet is adjacent to the parking area located a short hike above the river.

Shuttle services are available from several of the commercial river outfitters during the prime boating season, but they pack up and leave when the river flow drops below absolutely minimum raftable levels. At the time of this writing, licensed shuttle companies include Salt River Rafting (www.raftthesalt.com), Wilderness Aware Rafting (www.inaraft.com), Mild to Wild Rafting (www.mild2wildrafting.com), and Canyon Rio (www.canyonrio.com).

Geology

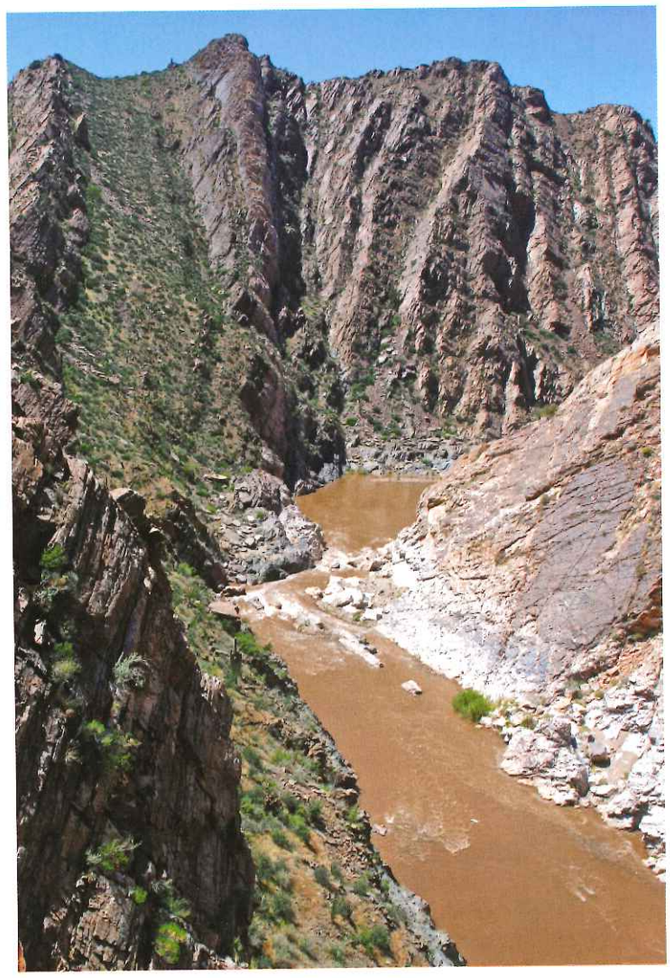
The Salt River Canyon is not nearly as well known as its popular cousin to the northwest, the Grand Canyon, but for a geologist, it is probably much more interesting. While the Grand Canyon cuts through the heart of the Colorado Plateau region, the Salt River Canyon slices through the transition zone between the Colorado Plateau at the put-in near Highway 60 and the Basin and Range Region at the Highway 288 take-out. The geologic story of a trip through the canyon is a complex one, and only the broad outlines of the story can be told here.



Looking downstream from mile 11.6 toward the Rock Canyon monocline. The downstream/west side of the monocline (left in this photo) is uplifted about 300 feet. The prominent cliff is Dripping Springs Quartzite. Puebloan ruins are located under the overhang at the base of the cliff in the center of the photo.

The geologic history of the Salt River Canyon falls into two parts: the placement of the rocks and their structures (folds, faults, intrusions), which took a very long time indeed, and the excavation of the canyon, which occurred much more rapidly and recently. Geologic processes occur continuously but very slowly. Our lives are so short that it appears geology is relatively unchanging. Occasionally we witness dramatic events like earthquakes, volcanic eruptions, and massive debris flows, but the overall process is hard to discern until you think of the number of years involved. For instance, the average tectonic plate moves at a piddling two inches per year, but in 100 million years a plate can move more than 3,000 miles. In the same period, sediment deposition on the seabed of just one hundredth of an inch per year would add up to almost 16 miles of sediment!

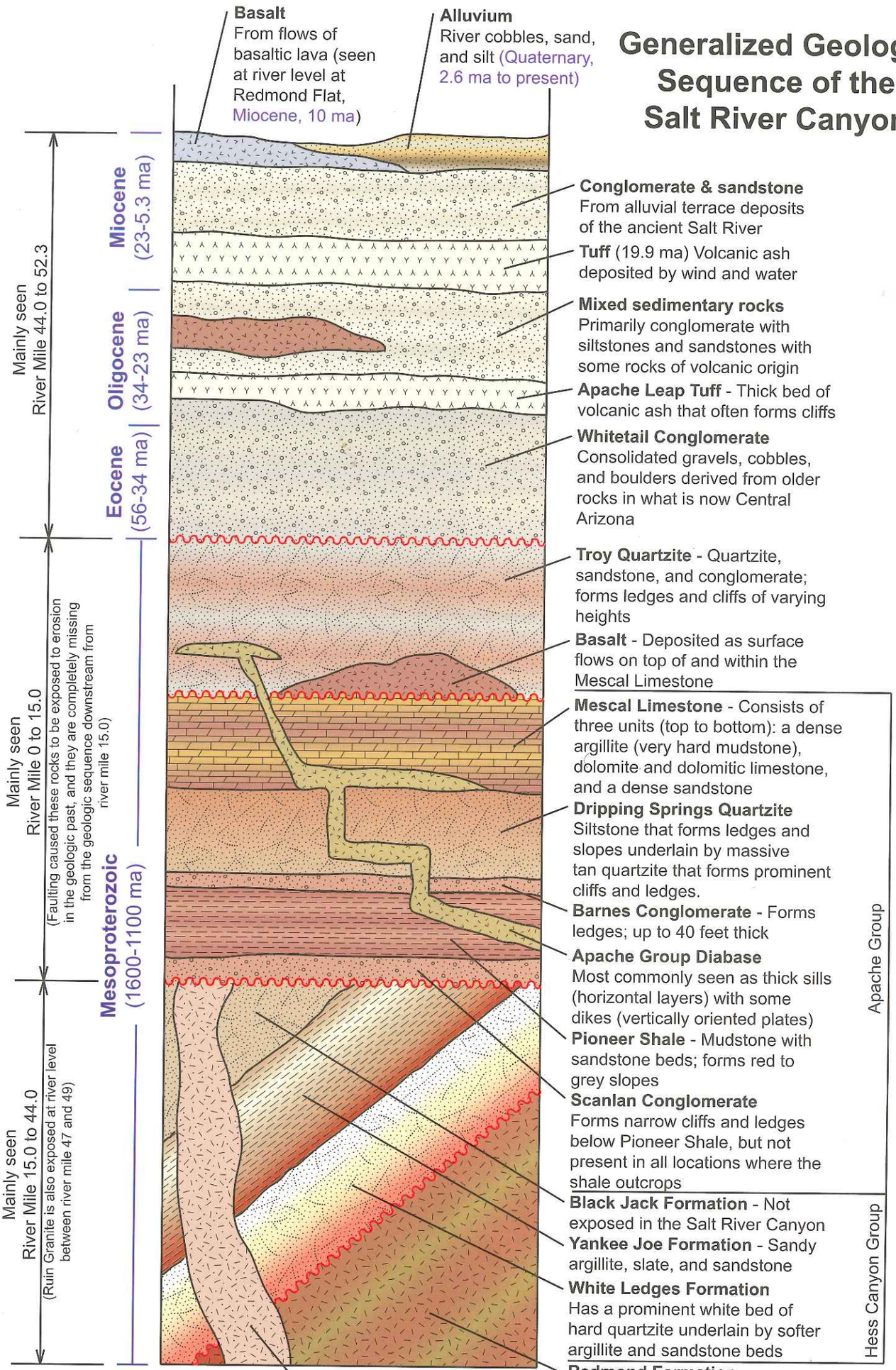
The two primary motive forces behind geology are plate tectonics and erosion/sedimentation. Plate tectonics is simply described as the motion of the earth's crust, which is made up of semi-rigid rock plates floating and carried along on semi-plastic partially molten rock. As the plates move around, they can push up mountains where they collide, they can slide underneath one another, they can grind past each other, or they can be pulled apart. These slow-motion collisions result in folding, fracturing, mountain building, subsidence, and volcanic activity, depending on just what is taking place at any given location. Erosion is the process by which rock is degraded and carried away by the forces of earthquakes, gravity, wind, water, ice, and snow. Eroded material is further degraded as it moves downhill and downstream, often being pulverized to sand or silt depending on the mineral content of the rock and the physical means of transport. The deposition of the eroded material occurs wherever the motive force diminishes and gravity takes over. This can be at the leading edge of a glacier, in lakes and other continental basins, and ultimately, bays and oceans. Sediments can eventually become sedimentary rock, mainly shale or mudstone (from clay), siltstone (from silt), and sandstone (need we say more?) Consolidated boulders, cobbles, and gravel are called conglomerate rock.



Steeply tilted beds of the White Ledges formation are seen in this photo looking downstream toward Quartzite Falls. The falls formed where water poured over a layer of hard quartzite with more erodible rock on the downstream side.

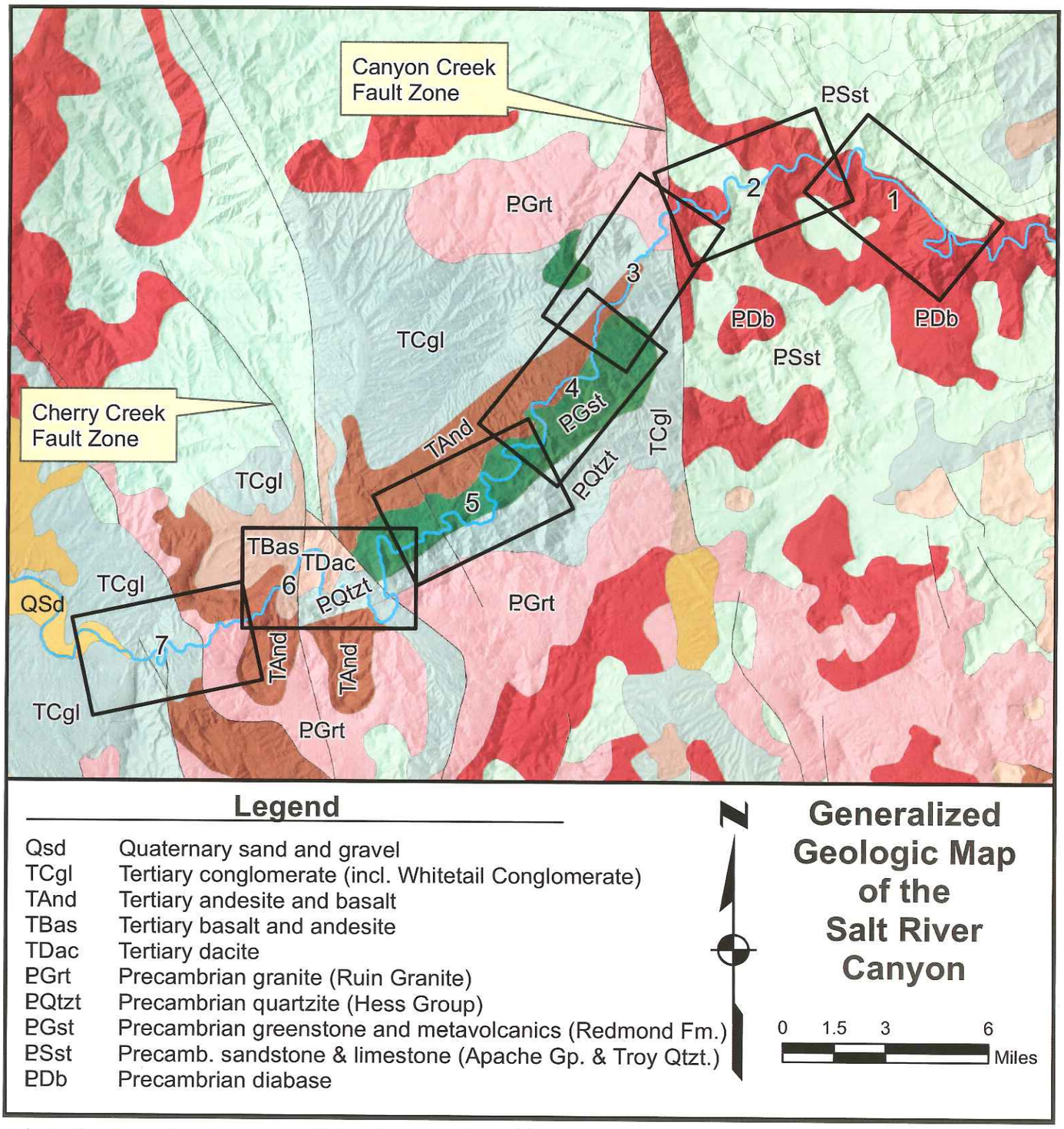
Another type of sedimentary deposition is associated with biology. Limestone has its origin in the skeletal fragments of marine life such as coral and other organisms, and environmental conditions must be just right for it to form

Generalized Geologic Sequence of the Salt River Canyon



Notes:

1. All of these rocks are not present at all locations. Faulting, uplift, and erosion removed all or parts of the Hess Canyon Group, Apache Group, and Troy Quartzite prior to deposition of the Eocene and younger rocks. Refer to the text.
2. Irregular red lines indicate discontinuities where a period of significant erosion interrupted the geologic sequence.
3. Blue text indicates the age of the rock. (ma = millions of years before present.)
4. Figure and descriptions adapted from Davis, et al, "Guide to the Geology of the Salt River Canyon Region, Arizona", Arizona Geological Society Digest XIII, 1981.



Adapted from http://mrdata.usgs.gov, United States Geological Survey.

(think warm). It is often deposited with clay and silt in shallow seas. Limestone is not a predominant type of rock in the Salt River Canyon. Of no relevance in the Salt River Canyon are carbonaceous deposits, particularly coal beds, which are associated with various plant deposits.

The Salt River Canyon exposes some of the oldest rocks in North America, with the oldest being about the same age as the rocks in the bottom of the Grand Canyon. We will begin our story with the Redmond Formation, the oldest rock exposed in the Salt River Canyon (see the figure on the preceding page). The Redmond dates to about 1,820-1,720 million years ago (Ma, or mega-annum) and was caused by volcanic ash flows and related pyroclastic deposits (think exploding volcanoes). It is a metavolcanic rock, meaning a rock of volcanic origin that has been metamorphically altered by extreme heat and pressure. The Redmond was exposed to erosion for a period of time followed by the deposition of sediments that make up the Hess Canyon group. All of these rocks were subsequently deformed, folded, and faulted by movement of the earth's crust about 1,650-1,600 Ma.

Granitic rocks intruded due to the upwelling of magma under many parts of the North American plate about 1,400 Ma. This intrusion does not appear to be connected to any crustal deformation or movement. The Ruin granite dates to this period. Erosion leveled the surface of the Salt River region to a flat plane around this time, setting the stage for the next chapter of geologic history.

Another period of deposition began, lasting for about 300 million years until about 1,100 Ma. The Apache Group and Troy Quartzite were laid down during this time. It is thought that the Apache Group was deposited in a continental basin or trough that resulted from rifting or stretching of the crust in this region. The Troy quartzite was deposited by wind and streams on top of the Apache Group. Diabase, an igneous rock, intruded liberally into the Apache Group rocks and, to a lesser extent, the Troy quartzite toward the end of this period, likely as a result of the rifting process. Asbestos mineralization occurred where the hot diabase intruded into beds of Mescal Limestone, the youngest rock of the Apache Group. Numerous asbestos mines were excavated to extract the mineral before the

health hazard of asbestos was recognized (asbestos dust commonly causes a form of lung cancer.)

The region then became tectonically passive for the next 800 million years or so. Many of the Paleozoic sedimentary rocks of the Grand Canyon were laid down during this time. It is likely that similar rocks were deposited in the Salt River region since thousands of feet of Paleozoic sediments are present north and south of the Salt River. Uplift of the region during the Laramide Orogeny (discussed in the next paragraph) probably resulted in the erosion of Mesozoic rocks, so none remain today.

Tectonic activity increased at the beginning of the Mesozoic about 250 Ma. Uplift, erosion, folding, and faulting preceded another period of much more recent sediment deposition. More than 20,000 feet of sediments were deposited during the Cretaceous (145-66 Ma) in southeastern Arizona during another tectonically quiet period of time. These were stripped off in the Salt River region by erosion during a period of uplift and deformation known as the Laramide Orogeny that gave rise to the geologic structures of the present Rocky Mountains and Colorado Plateau. This lasted from about 80 Ma to as recently as 35 Ma.

Recent faulting beginning in the mid-Miocene about 13 Ma has done the most recent remodeling of the rock units exposed along the Salt River. The Miocene faulting is largely due to the rifting associated with the formation of the Basin and Range region of the western United States. As the continental plate stretched apart, blocks of crust separated (rifted) and subsided at an angle, creating inland basins. All of the Tertiary (Eocene, Oligocene, and Miocene) rocks along the Salt River are the product of erosion of rocks, cobbles, sand, and silt from upland areas being deposited in continental basins and plains as well as volcanic activity that resulted in flows of basaltic lava and deposition of tuff beds (consolidated volcanic ash deposits). The Tertiary formations include the Whitetail Conglomerate, Apache Leap Tuff, and more recent sedimentary rocks and tuff deposits.

The Miocene and earlier faulting acted on both new and pre-existing fault lines. Some of the preexisting faults date back to the Proterozoic. While many folds and faults are present in the Salt River Canyon, there are two major fault groups that cross the canyon, dividing it into three distinct geologic regions:

- From Highway 60 to the Canyon Creek fault zone at mile 15.0, the canyon cuts through typical Colorado Plateau features consisting of mostly horizontal layers of the Apache Group and Troy Quartzite. Thick sills of diabase are also exposed in this reach. The canyon stair-steps up from the river over successive slopes, ledges, and cliffs.
- From the Canyon Creek fault zone at mile 15.0 to the Cherry Creek fault at mile 44.0, the canyon exposes the steeply tilted and older Proterozoic rocks of the Hess Canyon Group, Redmond Formation, and the somewhat younger Ruin Granite. The rocks west (downstream) of the Canyon Creek fault complex are upthrust about 5,000 feet relative to rocks on the east (upstream) side. It appears that this fault had at least two periods of major displacement. The first was probably during the Laramide Orogeny when it had possibly 10,000 feet of upward displacement on the west followed by 5,000 feet of downward displacement during the Miocene. Erosion occurred in the interim period, stripping all of the overlying Apache Group and Troy Quartzite. Whitetail conglomerate, Apache Leap Tuff, and basalt flows were deposited directly onto the older rocks of the Hess Group, Redmond Formation, and the Ruin Granite.
- From the Cherry Creek fault at mile 44.0 to Highway 288, the canyon traverses younger rocks of the Tertiary period. The Cherry Creek fault is downthrust on the west (downstream) side of the fault. The Tertiary rocks in this reach were deposited directly onto older Proterozoic rocks, as evidenced by the exposure in part of this reach of Ruin Granite at river level overlain by Whitetail Conglomerate.

The modern Salt River appears to have taken shape within the last five million years. Drainage patterns continually changed as inland basins filled with sediment and uplands eroded. The result is a river that drains all the way to the Pacific Ocean (ignoring, of course, all of the dams that now exist to impound and divert most flows.) The canyon you see today is a product of the erosion of 1.8 billion years of geologic history.

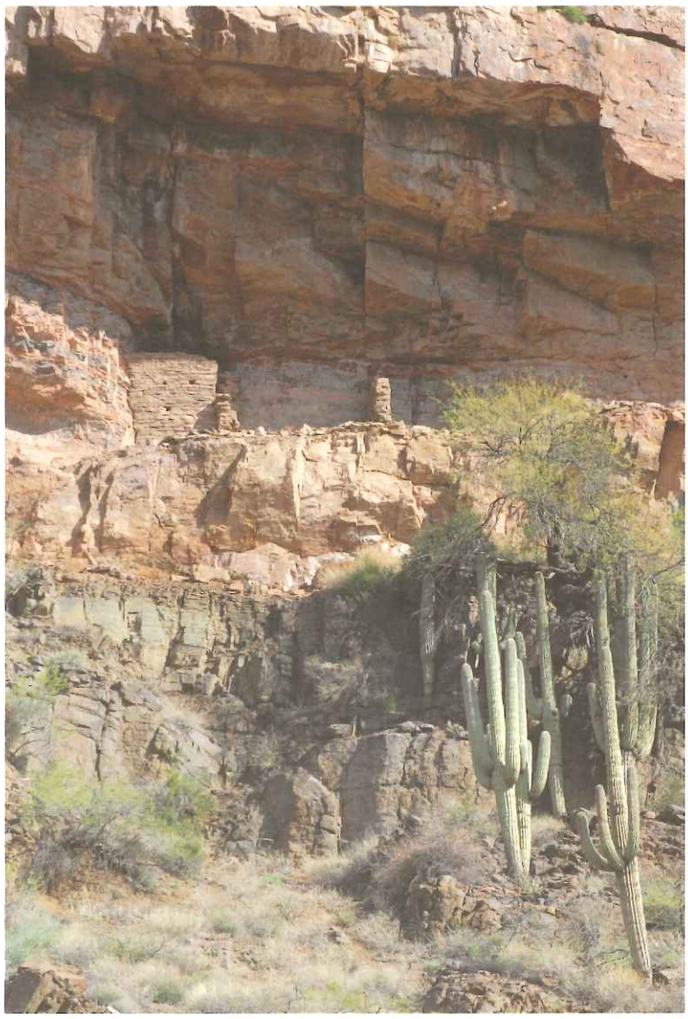
Archeology & History

Evidence of human activity in the Salt River Canyon area begins roughly 13,000 years ago as the Clovis people arrived in the region. It is presently thought this group of "First Americans" arrived to the New World from Eurasia on the Bering Land Bridge. They probably hunted America's big game in the greater Salt River Canyon region, including two species of elephants, brush ox, camel, sloth, short-faced bear, saber-toothed cat, horse, mountain goat, and bison. The animals that most closely resemble what remains today from this group reside in the Serengeti of Africa, but they actually evolved in the Americas and followed the land bridge west into Eurasia and Africa many hundreds of thousands of years earlier. Within a thousand years after our arrival on the continent, thirty-one different types of these large animals, known collectively as megafauna, became extinct. It's not clear exactly why these large species became extinct so quickly, but Pleistocene ecologists now think the combination of drought and hunting pressure from paleo hunters is the prime suspect. Remains of Pleistocene megafauna still remain in caves throughout North America.

Following the disappearance of the megafauna 12,000 years ago, an 8,000-year period passed where humans in the region existed by hunting the remaining smaller animals and gathering edible foods. Called the Archaic period, this long time period where evidence of human occupation is very scarce slowly saw hunting replaced by an increase in migratory movement based on harvesting specific plants at certain times of the year. This period would have seen increases and decreases in the human population depending on climate fluctuations as the climate generally grew warmer and drier.

Archeologists are able to differentiate several different cultures from a period beginning about 2,000 years ago. As agriculture came into existence, larger and semi-permanent communities began to be more widespread, leaving

more artifacts to document their inhabitants' lifestyle. The two cultures most relevant to the Salt River Canyon are the Mogollon and Hohokam. The Mogollon people inhabited the region of eastern Arizona including the upper Salt River Canyon, western New Mexico, and northern Mexico. The Hohokam lived along the rivers of south-central Arizona and the lower Salt River Canyon. There are many similarities between the two groups, but many of the differences appear to be driven by the different geographic regions they inhabited. Both cultures originally built pit-houses, developed irrigation, and later constructed more complex and permanent above-ground structures. The Hohokam built extensive irrigation systems in the central valleys and appear to have traded with native cultures including the Ancestral Puebloan culture (previously known as the Anasazi) to the north and Central American cultures. Large courts were constructed apparently for playing team sports with rubber balls. The Mogollon culture did not have access to large floodplains, so their agriculture and irrigation systems were more limited. Archeologists are able to differentiate the cultural groups by differences in their ceramics, architecture, and other artifacts, but it appears the groups were influenced by each other as well as by other cultures to the north and south. The Hohokam and Mogollon peaked around 1100 AD and then declined as did the Ancestral Puebloan culture to the north, possibly due to a combination of causes including climatic change, disease, over-farming, and civil strife.



Pueblo ruins near Rock Canyon. Visitation of this site is prohibited by the White Mountain Apache Tribe.

While the Hohokam and Mogollon cultures may have declined in terms of the artifacts that are associated with each, it is likely that they evolved into new cultures as social and environmental conditions changed. A people known as the Salado (the Spanish word for salt) occupied the lower Salt River Canyon in the Tonto Basin, primarily from the present-day Highway 288 to the Verde River. Salado sites show influences of the Hohokam, Mogollon, and Ancestral Puebloan cultures. A distinctive characteristic is the polychrome pottery they left behind. The Salado are dated from about 1150 AD, appear to have peaked around 1350 AD, and disappeared as a culture shortly thereafter. The Hopi of northeastern Arizona and the Pueblo tribes in New Mexico are the modern descendents of the early pueblo cultures.

The Apache arrived in the Salt River region sometime between 1500 and 1600 AD, shortly before or contemporaneous with the arrival of the Spanish. Apache tribal groups speak Athabaskan dialects, as do the Navajo to whom they are related. Athabaskan dialects appear to have originated in the region from Alaska through western Canada, suggesting that Athabaskan-speaking peoples in the southwest migrated into the region from far to the north. Francisco Coronado described them in 1541 as "dog people" since they used dogs as pack animals, but the Apache quickly adopted horses and became competent equestrians as a result of their contact with the Spaniards.

Collectively, the Apache are not a single tribe. While they have similar language and cultural beginnings, over centuries of time and geographical distance, the tribes and sub-groups developed various dialects, customs, and practices, and it is difficult for modern scholars to identify them clearly. The Apache occupied large parts of Arizona, New Mexico, and western Texas in the early 1800s. The tribes that inhabited eastern Arizona are collectively known as the Western Apache, and they include the major groups of Cibecue, White Mountain, and Dilzhe'e (Tonto) people along with many sub-groups. In the past, the Apache were a migratory culture that did not build permanent settlements but instead moved seasonally in search of game and edible plants, living more like the late Archaic people two thousand years earlier. They grew plots of beans, pumpkins, and corn in flood plains along rivers and streams. They wove baskets, but pottery and other ceramics were not common. Raiding was occasionally employed during lean times when food was scarce, but the Apache also engaged in trade with other tribal groups in the larger region.

The first European-Americans to visit the region were early Spanish explorers, including Coronado, whose expedition called the river "Rio de las Balsas" (River of Rafts) after the means of conveyance they used to cross the upper Salt River in 1540. Other explorers used different names, but the name Salado (Spanish for Salt) was first applied in 1699 by Father Eusebio Francisco Kino, a Jesuit missionary in the region. It is quite possible that the name was given to him by his Pima guide.

Trappers are known to have travelled along the upper Salt River in the 1820s. A trapper named James Pattie reported of a trip in 1826 with a group of French who were attacked by Indians near the confluence of the Salt and Gila rivers. Several trappers were killed, and others, including Pattie, fled up the Salt River, trapping beaver along the way. Kit Carson led a trapping party down the Salt River and up the Verde River in 1829 before the party split with some members travelling to California and others returning to Taos, where they started.

Spanish missionary settlements in the Southwest essentially existed as remote outposts. Various bands of Apache and other Native American tribal groups sometimes traded with these settlements and sometimes engaged in

hostilities. In the latter case, Spanish troops would intervene, and an uneasy peace would ensue until the next conflict arose. This pattern continued with Mexican independence in 1821. It is estimated that 5000 Mexicans and 100 settlements were destroyed by Apache attacks between 1820 and 1835. Mexico imposed a bounty on Apache scalps in 1835, and hostilities later increased with retaliatory raids after Apache leaders were killed. When the United States went to war with Mexico in 1846, some Apache initially sided with the Americans, but conflicts escalated again in the 1850s as miners entered the larger region. The history of what occurred over the next twenty years largely happened outside the confines of the Salt River Canyon, but the result was the establishment of the San Carlos and Fort Apache Indian reservations in 1871 and 1872. Nevertheless, various bands of Apache warriors continued to organize and fight a guerilla war until 1886 when Geronimo, the most prominent of the insurgent Apache leaders, was forced to surrender at Skeleton Canyon in southeastern Arizona.

Although chrysotile asbestos was discovered in the Salt River Canyon in 1872, mining in the region was originally centered to the south at McMillanville (located about 13 miles north of Globe on U.S. Highway 60) where silver was discovered in 1876. A salt evaporation operation was developed in 1878 at the Salt Banks (river mile 10.0), but it is unclear how long it operated since the developer, King S. Wooley, died in 1879. It reportedly produced a ton of salt per day. Other than scattered ranching activities, there was little development in the upper Salt River Canyon until 1911 when the asbestos mine at Chrysotile was opened about five miles south of present location of the Highway 60 bridge. Other asbestos mines were developed in the upper part of the canyon (upstream from Rock Canyon at mile 12), some of which are visible from the river. Asbestos mining declined as the adverse health effects of asbestos were recognized, and all mining activity ceased by the 1980s. U.S. Highway 60 improved access into the canyon after it was constructed during the 1930s.

Recreational boating on the Salt began sometime after World War II, with the Sierra Club and the Boy Scouts organizing trips in the 1950s. As on other western rivers, surplus military rafts were often used for those early trips. Boating and wilderness outdoor activities increased markedly in the 1970s as environmental awareness and protection became a national priority. The Salt River Canyon Wilderness was established in 1984.

Most of the trips that ran what is now the wilderness section of the river downstream from Gleason Flat (river mile 19.3) were forced to portage or line Quartzite Falls until a commercial boatman and a party of seven accomplices blasted the falls in late 1993 to improve passage. At least four fatalities had occurred at the site, including two in 1993. The ringleader claimed that the act was for public safety, but the evidence suggests the motive may have been largely for his personal convenience. The act of environmental vandalism made national headlines and resulted in Federal criminal charges. The ringleader fled the country and was later extradited and sentenced to 3-1/2 years for various fraud charges related to his flight as well as the bombing.

Desert Life

The setting of a whitewater river in the Sonoran Desert makes the Salt River unique in the United States. Forests of tall saguaro cactus among other plants of the desert create striking visual scenes that you will not see elsewhere. Of course, you probably will want to wander around and explore this natural beauty. Sadly, though, walking through the desert can be a challenge as most things seem to stick, stab, sting, or bite, and you will likely spend some time pulling thorns after you complete your hike, if not sooner. The presence of saguaro forests lends a mental image of the Salt River Canyon that is not entirely descriptive of the ecological variety you will encounter on a river trip since several distinct life zones* are found along river corridor.

There is the river itself, which was once home to as many as fifteen native fish species. Native fish evolved over millions of years in one of the harshest river environments known. They adapted to survive floods, prolonged droughts, extreme temperatures, and salinities that few other fish could tolerate. Many of the fish of the Salt River were endemic to the lower Colorado River basin, but extensive damming, channelizing, draining, and diversion of water from the Salt, Gila, and Colorado rivers along with the introduction of predatory, nonnative fish killed off the native species. Today it appears that few native fish, if any, remain in the upper Salt River Canyon. Nonnative species include channel and flathead catfish, smallmouth bass, and rainbow trout, all of which prey on native fish. Common carp, imported from Asia in the late 1800s, are present. Small nonnative fish, including fathead minnow and red shiner, compete with small native fish for food and breeding sites.

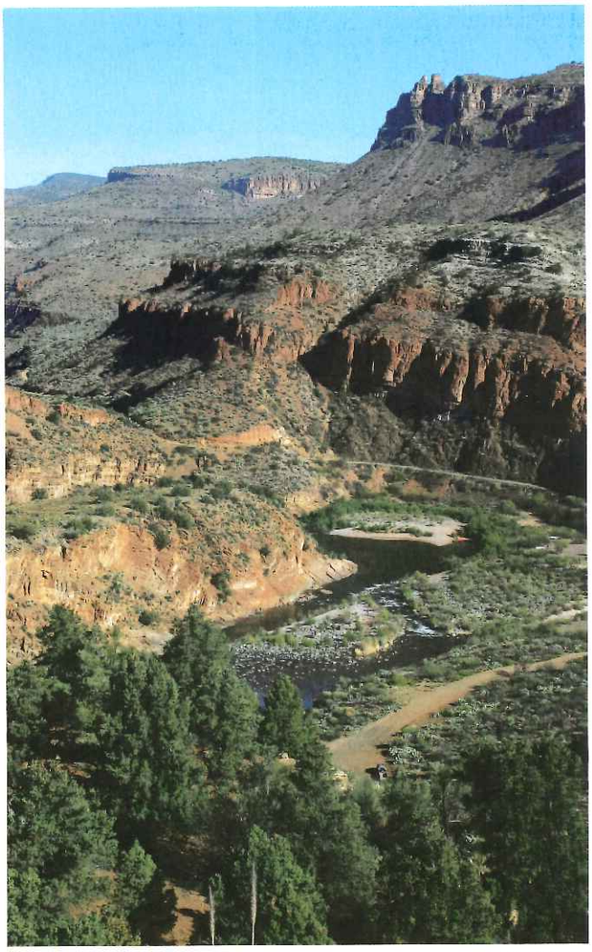
The riparian zone is the interface area between the river and adjacent uplands areas. It includes the zone of perennially saturated soil as well as parts of the floodplain that are inundated annually and retain moisture for an extended period. Plant and animal communities in the riparian zone depend on the greater availability of water, but are often still adapted to reduce water loss. Since the upper Salt is a free-flowing river, it floods in most years and occasionally sees extremely high flows that scour the riverbanks and floodplain (historical maximum peak flows of almost 77,000 cfs at Highway 60 and 143,000 cfs at Highway 288 were recorded on January 8, 1993).

Trees often grow along the river and commonly include mesquite, catclaw acacia, Goodding willow, coyote willow, and cottonwood. Sycamore and black walnut also make an appearance. Riparian trees along the upper Salt tend to get largest in protected areas where they can reach moisture without getting hammered by flood events. Mesquite and acacia can grow at the upper limits of the flood plain since they are able to reach deep with their roots, and they are well adapted for the desert environment. Tamarisk, a feathery tree from the Mediterranean region that was introduced to the U.S. in the 1800s, grows along the riverbank and sandy floodplain areas. Riparian shrubs include seep willow and Arizona grape. Moist areas along the river support various grasses, sedges, and forbs including

** The concept of life zones was originally proposed by C. Hart Merriam in 1889 based on his research in Arizona from the bottom of the Grand Canyon to the top of Humphreys Peak. While the classification system he devised oversimplifies the diversity of ecological communities found in different locales, it provides a useful framework for discussion, particularly in the Western US.*

three-awn and common reed. You can also find monkey flower and ferns in protected moist areas and along tributary streams.

You will notice that the vegetation behind the riparian zone changes as you travel down the river. Near Highway 60, the canyon falls within the Upper Sonoran Zone, descriptively called a piñon-juniper woodland, and transitions to the hotter, drier environment of the Lower Sonoran Zone, more descriptively known as Sonoran desertscrub. Since the river generally runs toward the southwest, the left side of the canyon is oriented more toward the north and receives less direct sunlight than the southerly facing slopes on the right side of the river, which tend to be hotter and drier. This has a corresponding effect on the vegetation, with north-facing slopes being populated with many species that are only found at higher elevations on south-facing slopes. This difference is dramatic in the reaches of the canyon upstream from mile 15 where juniper, piñon pine, and scattered ponderosa pine are seen on many slopes on river left but only in protected side canyons on river right. Red barberry and shrub live oak are also seen in the Upper Sonoran Zone.



This photo of the launch area, taken from Highway 60, overlooks a stand of ponderosa pine, juniper, and piñon pine. Piñon and juniper two indicators of the Upper Sonoran life zone.

Sonoran desertscrub becomes more evident near mile 9 where scattered saguaro begin to appear on river right. Sonoran desertscrub includes numerous species of cacti, yucca, and yucca-related plants. Spines on these plants prevent them from being eaten by wildlife, and their wax-like surfaces protect them from water loss in the hot environment. The larger cacti, like the saguaro, develop a woody skeletal structure that can stand for decades after the plant dies. The saguaro is Arizona's state flower. Older saguaros may live up to 150 years and reach up to 70 feet in height. They bloom mainly at night and are primarily pollinated by long-nosed bats; although, moths, bees, and some birds provide pollination services as well. Other common cacti include the barrel cactus, hedgehog cactus, cholla, and prickly pear. Various species of yucca are represented. Yucca-like plants include sotol and agave and, while closely related, are not true yuccas. Another thorny desert plant is the ocotillo, which has tall spindly stems that produce leaves and small red flowers after rains.

The Lower Sonoran Zone is home to many hardy, drought-tolerant shrubs and trees. Palo verde are usually small trees about 15 feet tall with smooth green bark and twigs. They bear leaves only for a short time after rains, and they produce bright yellow flowers. Some of the more common shrubs include creosote bush (which has a distinct odor, especially after a summer rainstorm), desert broom (also known as greasewood), Mormon tea (ephedra), and squawbush. Crucifixion thorn is a tall leafless shrub that has broom-like branches with greenish-blue stems that often terminate with a sharp point. Jojoba (pronounced ha-HO-bah) is a native shrub that is economically useful for the unique waxy oil contained in its seeds, which is very similar to the oil from sperm whales that was once used as a component of automatic transmission fluid and other industrial lubricants. Jojoba is cultivated in various locales around the world including a number of plantations in the United States. The San Carlos Apache farmed it for a time in the 1970s and still collect seeds from wild plants. Today, jojoba oil is primarily used in the cosmetic and pharmaceutical industries.

The desert also has numerous species of smaller herbaceous plants. Some of the more noteworthy flowering plants that you may encounter include globemallow, desert marigold, caltrop, burrobrush, clammy wood, desert honeysuckle, tree tobacco, and jimson weed. Jimson weed, also known as datura, produces large trumpet-shaped white flowers throughout the summer. It contains an hallucinatory alkaloid that was used in rituals by Native Americans, but it has also lead to numerous deaths due to its toxicity.

Teddy bear cholla (Cylindropuntia bigelovii). The name sounds innocuous, but this plant is anything but cuddly and soft. Be very careful if you approach it since it drops stems prolifically, and those stems almost seem able to jump onto your feet and legs to hitch a ride.

Wildlife is common in the canyon, but you will need to be watchful to see it. Birds, of course, are the most common wildlife, but it often takes a good eye or a set of binoculars to appreciate what you are seeing. Most birds are attracted to the specific habitat for which they are best adapted. Waterfowl, ducks such as mallards, teals and mergansers, and geese spend a good deal of time swimming and foraging in the river while others including swallows and swifts swoop low over the water in search of food. Kingfishers often hunt from an elevated perch on an overhanging limb, diving down when a meal comes by. Other birds, such as spotted sandpipers and killdeer, forage along and above the

shoreline. Great blue herons are probably the largest wading birds you will see with a height of up to four feet. They will repeatedly take off and fly down river as you approach, and you may follow one for several miles before it decides to turn back upstream, flying well away from you to safety.

The shoreline vegetation and adjacent wooded areas are often populated with numerous songbirds. Mockingbirds, cardinals, vireos, warblers, yellow-breasted chats, flycatchers, goldfinches, blue grosbeaks, Bewick's wrens, doves, and blue-grey gnatcatchers are among the many you may spot. Hummingbirds buzz about when the wildflowers are in bloom. Western screech owls can be found in wooded areas near the river.

Rocky cliffs are home to canyon wrens and black phoebes. Canyon wrens are notable for their prominent descending song, which is the song of canyon country for many boaters. Cliff swallows and rough-winged swallows build colonies of mud nests under overhanging rock faces near the river while bald eagles, red-tail hawks, and other raptors prefer high promontories and inaccessible ledges for nesting and roosting. The low vegetation of the desert scrub environment provides cover and habitat for roadrunners, Gambel's quail, elf owls, Gila woodpeckers, cactus wrens, and other birds.

Frogs and toads are amphibians found in and along the river and tributary streams. Amphibians reproduce by laying their eggs in the water, and larval amphibians must remain in the water until they reach adulthood. Toads have a more compact, stout physique than frogs, and adult toads typically spend more time out of the water than frogs. Some species of adult toads leave the water and rarely return except to reproduce. Woodhouse and red-spotted toads are the most commonly seen species. Spadefoot toads are also present. Canyon tree frogs and leopard frogs are native to the river and tributaries. Bullfrogs are also common, but were introduced to California from the Eastern United States in the 1890s. They were found in the lower Colorado basin by the 1920s and spread upstream from there. Voracious predators of smaller amphibians and gartersnakes, bullfrogs have resulted in the reduction of native frog populations throughout the west.

Turtles and tortoises are the reptilian equivalent of frogs and toads: turtles are primarily aquatic creatures while tortoises live on dry land. The two most common are the Sonoran mud turtle and the desert tortoise. Both are primarily herbivores and dig burrows for hibernation and egg laying. Desert tortoises are rarely seen since they are inactive except after seasonal rains. They can live to an age of 80 years.

Lizards are the most common reptiles you will see. Greater earless lizards and zebra-tailed lizards live near the river. Both raise their tails when they run from predators, often casting them off to act as wriggling lures so they can escape danger to grow a new tail. The spiny lizard, eastern fence lizard, and side-blotched lizard are often seen in rocky or open areas while tree lizards are often seen on trees, logs, and rocks. The male tree lizard is territorial and performs a display that resembles push-ups. Whiptail lizards, alligator lizards, many-lined skinks, and Great Plains skinks live on the ground, often underneath vegetation.

One lizard that you will be lucky to see is the colorful Gila monster since it spends most of its time in underground burrows or rocky shelters. The Gila monster is a large, stout lizard that moves slowly. Gila monsters belong to the family of Helodermatidae, the only family of venomous lizards in the world. Venom secreted from glands in the lower jaw is delivered through grooves in the teeth. While painful, the bite is rarely fatal to humans due to the inability of the lizard to effectively bite a human. Gila monsters are protected by Arizona state law, and disturbing them is prohibited.

Snakes are seen less frequently than most lizards, but they are present. Several species of gartersnakes are found in the canyon. Gartersnakes are slender snakes, and most species are notable for the stripe(s) down the length of their bodies. They are usually encountered near water. Coachwhips and whipsnakes are related species. They are long, thin snakes that can be found just about anywhere in the canyon. Venomous Sonoran coral snakes and the similar-looking but non-venomous Sonoran king snake are also present, but rarely seen. Both have yellow, black, and red bands around their bodies, but the red and yellow bands of the king snake are separated by thin black bands.

Four species of rattlesnake are found in the canyon: the western, western diamondback, black-tailed, and Mohave

Gila monster (Heloderma suspectum). Poisonous. Do not handle. The genus name Heloderma is derived from Greek, literally meaning "studded skin," which is a reference to their bead-like scales.

rattlesnakes. All have the distinctive rattles on their tails and large triangular heads. Coloration can vary within each species, but all of these have some sort of diamond-like pattern along their backs. They can be hard to spot, so keep your eyes open when walking through brushy areas as they usually hunt by waiting for prey to wander by. In spite of their reputation, rattlesnakes usually do not rattle a warning unless they are cornered and extremely agitated. Most bite victims are not really victims since they were attempting to handle or agitate the snake. Leave them alone and keep your distance

If you see a rattlesnake in this position, it's probably a good time to back up. This individual appears to be a western diamondback rattlesnake (Crotalus atrox) because of the bold black and white bands on the tail. The similar Mohave rattlesnake has narrower black bands. (Patrick Florence)

Various mammals live in the Salt River Canyon, and bats are probably the most numerous. At least twenty species of bats are present in the canyon at least part of the year with some that migrate and some that hibernate in the winter. Bats are most active during the summer months. There are three species of bat most often seen. The very small pipistrelle, which is the smallest of the North American bats. The second is the relatively large pallid bat. The third and most common species is the small myotis. You will notice bats most frequently near dusk as they emerge from crevices, caves, and other protected places to feed.

Small mammals are often seen by river travelers. The most numerous are rodents, which include mice and squirrels. Four similar species of white-footed mice are found in the canyon along with three species of woodrats. White-throated woodrats are the most common. Woodrats, also called packrats, construct large elaborate nests (middens) up to eight feet in diameter that are often cemented by crystallized urine. Woodrat middens that are thousands of years old have been found in shelters and caves, providing scientists with rich data about environmental conditions at the time they were constructed.

Another type of rodent found in the canyon is beaver. Once reportedly numerous, they were trapped along the Salt by Kit Carson and others beginning in the early 1800s. They are still present along the river, but are not as common as they once were. You are most likely to see their slides among thick riverbank vegetation where they enter and exit the water from burrows.

Two species of cottontail rabbit live in the canyon. Western and desert cottontails are usually found in brushy or protected areas. Jackrabbits tend to prefer more open ground. Larger than cottontails, jackrabbits are technically hares, not rabbits, and are easily identified by their taller ears. Hares are born in shallow nests, fully furred with their eyes open, whereas rabbits are born hairless and blind in underground burrows.

Other small to medium-size mammals include four species of spotted and striped skunks, which are fairly common. Also present are the related species of raccoons, ringtail cats, and, less commonly, coatimundis. They all have "hands" and striped tails, but they vary in size and build. All are non-discriminating omnivores. Coatimundis are active during the day while raccoons and ringtails are nocturnal. Ringtail cats have a notorious reputation for being camp raiders.

White-tail deer and mule deer occasionally may be seen foraging in the canyon, individually or in small groups. Mule deer are larger with prominently large ears and black tails. Both move quickly away from perceived danger, so you are not likely to see them up close.

Bighorn sheep were known to be colonizing the upper Salt River Canyon over the past 30 years after a long absence from the area. It was unclear whether they were desert bighorn that migrated from an area about twenty miles to the southwest with no known travel routes, or if they were Rocky Mountain bighorn from an area about 100 miles to the east that followed the canyon. Both varieties are subspecies that are capable of interbreeding. Genetic testing in 2005 demonstrated that the colonies are Rocky Mountain bighorn sheep.

Javelina (collared peccary) are common omnivores along the Salt. Javelina will eat small animals, but their preferred diet consists of roots, grasses, seeds, and cacti - particularly prickly pear. They often travel in small herds and resemble pigs, but they are not closely related. Javelina have an exaggerated reputation for ferocity, but like all wildlife, they should be observed from a safe distance, especially if you have a dog with you, which

Saguaros and ocotillo stand on a rocky slope above Canyon Creek. Note the cavity in the saguaro on the right. Gila woodpeckers are known to excavate nest cavities, and after a woodpecker abandons a cavity, elf owls, screech owls, purple martins, finches, and other cavity nesters can move in. (Barbara Vinson)

they have been known to kill if provoked.

Carnivorous mammals are present in the canyon, but the larger carnivores typically range over large areas and have low population densities, so you are much less likely to see them. They include bobcats, mountain lions, and bear. Bobcats are smaller than mountain lions and typically eat smaller game - mostly rodents, rabbits, and reptiles. Mountain lion usually prey on deer, but they sometimes take smaller game as well. Look for their large footprints in moist sand and soil near the river. Note that cat prints do not have claws since they walk with their claws retracted. Black bear are known to inhabit the Salt River Canyon, but they are rarely seen. Coyotes also live in the area and may roam as individuals or small packs. They are also rarely seen, but you may hear their yipping cries when you are sitting in camp.

Resource Protection

Virtually every trail, route and game path was used by "those who came before." Evidence of these early inhabitants is common in the canyons. Historical and archeological sites and artifacts show the hand of man, dating back thousands of years. All historical and archeological sites and artifacts on federal lands are protected by federal law. Do not touch or disturb what you do find. Please do not build your own shrines, except in your mind. Remember the wonderful word, humility. You will be violating the Antiquities Act of 1906 and the Archeological Resource Protection Act of 1979 if you remove historical material that is greater than 50 years old. Additionally, federal regulations prohibit removing, disturbing, or defacing natural, historic, and archeological features. The best rule to remember is to take plenty of photographs but leave all of the rocks, vegetation, and artifacts where and as you find them.

Rinse cycle at Maytag Rapid.

Keep in mind the number of river runners who pass through the canyon every year. The river use regulations regarding sanitation, safety, and camping are intended to minimize impacts to the river corridor. Please review the current river use regulations included in your permit package carefully prior to your trip, and make sure all of your trip participants also understand the rules, particularly those new to river travel. Additionally, the Leave No Trace Center for Outdoor Ethics (www.lnt.org) has a set of excellent outdoor travel principles that all who enjoy wild areas should be aware of and follow.

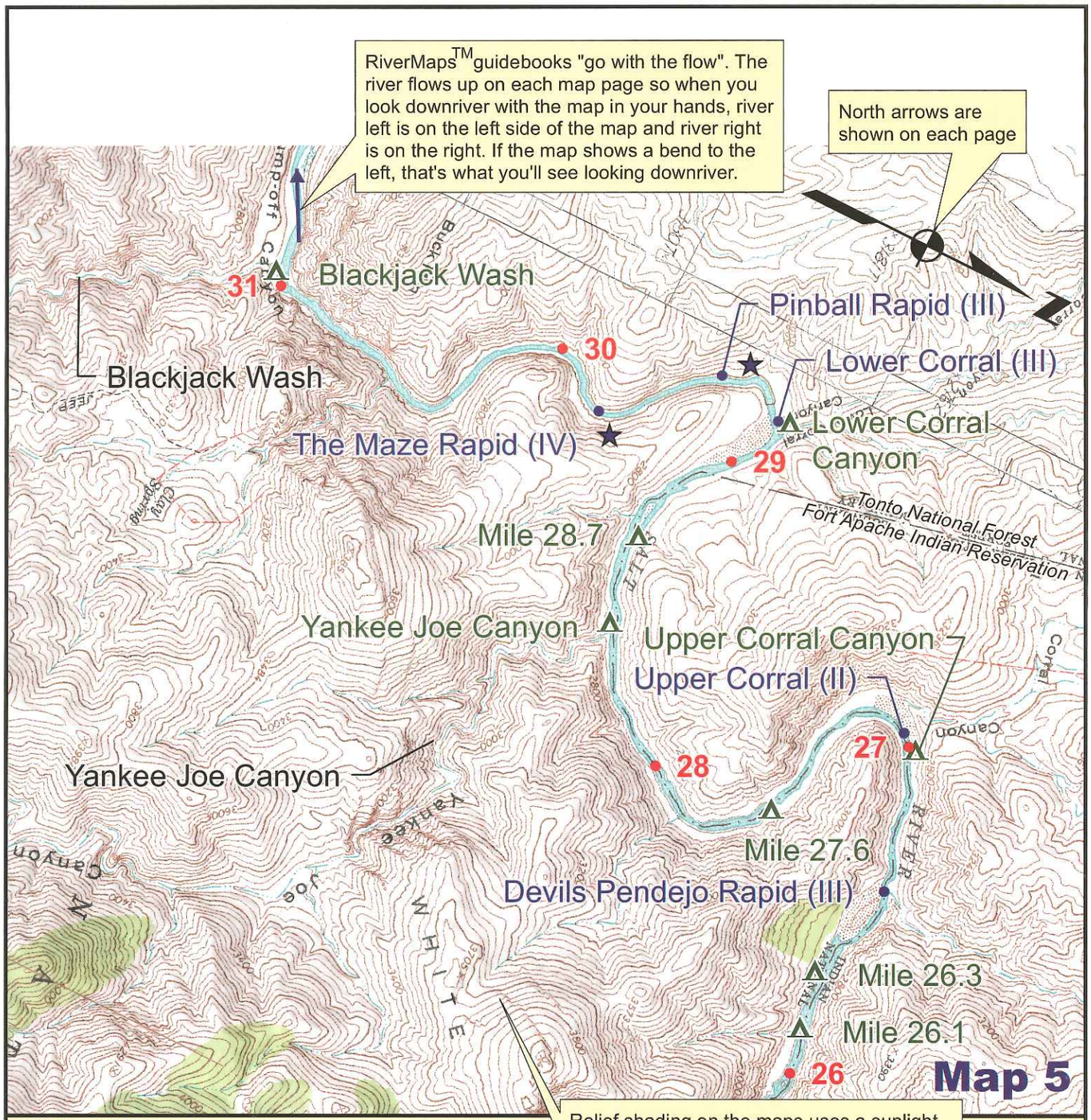
Map Information

Because ***RiverMaps***™ map books are oriented so the river flows upward on each page, the USGS maps are usually rotated out of their normal "north up" orientation. Although a north arrow is provided on each map page so you can orient the map more accurately with a compass, you can roughly orient the map simply by rotating it to be aligned with the river at your location.

Mileage in this guide is measured downstream from the non-commercial river access point at Highway 60.

The rating of rapids is according to the International Scale of River Difficulty, which rates rapids from I (easy) through VI (extreme and exploratory). Rapids in this guide are rated from I through IV (advanced) at medium water levels. River conditions generally become more rocky and technical at low water levels when wraps and pins are a danger. High water produces more powerful hydraulics that can flip boats suddenly. Ratings are subjective and are intended only to provide a general indication of the level of a rapid's difficulty. Ratings shown in this guide should be expected to vary from actual conditions dependent on flow variations, flooding (particularly of side streams that may carry large volumes of rock and debris into the river), and other causes. High or low flows often cause a rapid's rating to increase or decrease substantially. Rocks and sandbars may appear or disappear at different water levels, causing channels to become constricted, turbulent, and more difficult to negotiate. Boaters should stay alert for changed conditions!

Dusk at Cliffhanger Camp. (Barbara Vinson)



RiverMaps Legend:

Campsites:	Mile 28
River Mile:	28
Rapid (rating in parenthesis):	Lower Corral (III)
Rapid Scout Location:	★
Points of Interest:	Blackjack Wash

All RiverMaps™ map books are normally printed at a scale of 2,000 feet per inch (1:24,000), the same scale as the original USGS maps.

Safety is *Your* Responsiblity!

This book is not a substitute for experience and judgment. American Whitewater publishes an excellent safety code that is available on-line through their website at www.awa.org, and all boaters should be familiar with it. We assume you have the skills and experience with river running that no book can replace. If you don't, you should not assume that a guidebook will keep you out of trouble. An experienced boater knows when to scout, how to read water, and when to stay home. If you don't know what we mean by this, then you should start on an easier river than the Salt River. Mishaps occur in a heartbeat and, as a result, people occasionally die. The authors and publishers are in no way responsible for personal injury, death, property damage, or violation of the law in connection with the use of this publication. Be aware that ***YOU*** are responsible for ***your OWN*** safety. The Salt River Canyon is a beautiful place, but it is not a municipal park where a call to 911 will summon help quickly. At best, several hours are likely to elapse between your first attempts to seek help and when help actually arrives. Be safe and smart while boating!

Mile 0 to Mile 8 - Map 1

Start at the bottom! Text reads from bottom of page to top on all map pages along with the river!

Mile 7.6 - The river flows over yet another boulder bar at **Raft Ripper Rapid**. Try to avoid hitting the larger boulders, particularly as the water level drops.

Mile 7.2 - The river splits around islands at **Three Way Rapid** with most flow going to the right between two islands at the head of the rapid. Going straight may leave you grounded.

Mile 6.5, Left - **Mile 6.5 Camp** is located on a gravel and sand beach with scattered small tamarisk for limited wind protection. This site is suitable for a large group.

Mile 6.4 - **Cibecue Rapid** runs between the debris fan from Cibecue Creek on the right and a cobble bar on the inside of the bend on river left.

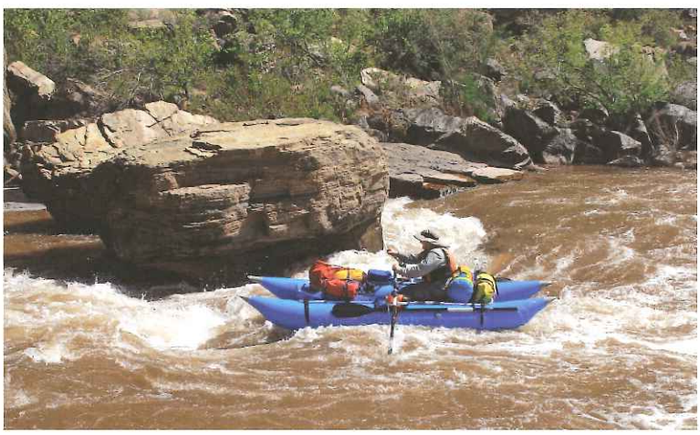
Mile 6.0, Right - **Cibecue River Access** has a small primitive campsite for car camping. This may be the last available access point from the river road depending on the condition of the crossing at Cibecue Creek, which occasionally makes the road impassable, particularly for low-clearance vehicles.

Mile 5.5 - **Exhibition Rapid** occurs where the river bends around a boulder and cobble bar on the left. The river narrows at the bottom of the rapid, producing some standing waves at higher water levels.

Mile 5.0, Right - **Second Campground River Access** is a designated primitive campsite of the White Mountain Apache Tribe. This campground is used heavily by the commercial outfitters during the spring boating season, so you may want to camp elsewhere. It has no facilities other than two vault toilets. Pack your trash out.

Mile 3.8, Left - **Tonto National Forest** begins on the left side of the river. The middle of the river is the boundary between the National Forest and the White Mountain Apache Tribal Lands for the next 25 miles.

Mile 2.7, Left - **Mile 2.7 Camp** is a medium-size camp on a sandy, brushy bench above the river.



A small cataraft passes the large rock in Overboard Rapid at 600 cfs.

Mile 2.3 - **Overboard Rapid** is a sharp drop over a steep boulder and cobble bar that cuts diagonally across the river from right to left. You should approach this toward the right at raftable water levels so you can drop into the deeper channel on the right or, when the water is low, just pick the deepest slot to drop over the bar. Once you are in the deep channel on the right, watch for a large rock and hole on the right side.

Mile 2.0, Right - **Mile 2.0 Camp** is a large camp on a mostly open gravel and sand beach.

Mile 1.9 - The current picks up over shallow rocks as you enter **Mother Rock Rapid**, punctuated by a big rock that blocks the center of the channel. Pass to the right of this mother.

Mile 1.7 - **Grumman Rapid** has scattered boulders and holes.

Mile 1.6, Left - **Mile 1.6 Camp** is a large campsite on a bench above the river. The camp has scattered trees and brush.

Mile 1.1 - **Maytag Rapid** has a shallow high-water channel to the left and a narrow, deeper chute along the bedrock ledges on the right. The right run is preferred since the left run rejoins the right over a steep cobble bank.

Mile 0.9 - **Bump and Grind Rapid** is a short drop over a boulder and cobble bar that cuts diagonally across the river from left to right. The approach is also rocky at low water.

Mile 0.8, Left - **Mile 0.8 Camp** is a small site among scattered small trees and brush.

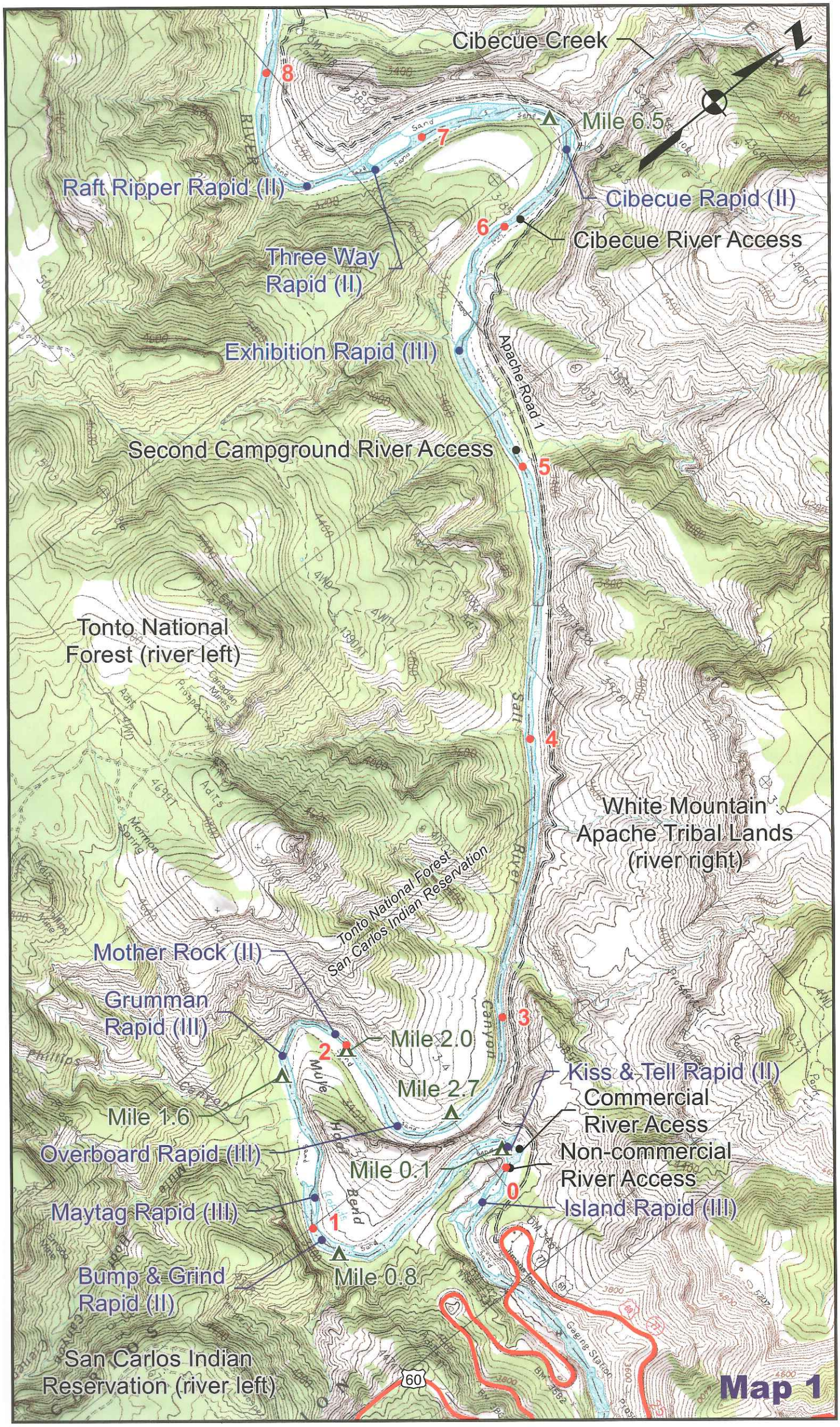
Mile 0.1 - **Kiss and Tell Rapid** is a short drop over a cobble bar. The tail waves run into the cliff on the right. This point marks the beginning of Mule Hoof Bend, an oxbow meander that will someday become an isolated rincon when the river cuts through the narrow ridge line. You will travel about 2.7 miles around the bend to get to a point that is only 0.2 miles away from here.

Mile 0.1, Right - The **commercial river access point** is located just off the river road downstream from the non-commercial river access point.

Mile 0.1, Left - Got a late start? Feeling lazy and don't want to go far? Waiting for someone? Then just cross the river and pull in at **0.1 Mile Camp**. This is a large camp on a gravel beach at the base of a cliff. Note that the left side of the river is within the Fort San Carlos Indian Reservation for the first 3.8 miles of your river voyage.

Mile 0.0 - **Dripping Springs Quartzite** is exposed at river level just upstream from the put-in, and diabase is at river level just downstream. For the next 15 miles, you will travel through mostly horizontal layers of the Apache Group and intruded diabase sills. Numerous asbestos mines are located well above the river on the left where diabase contacts the Mescal Limestone.

Mile 0.0, Right – The **non-commercial river access point** is one of several possible launch points along the first ten miles of the river. The others are reached by driving downstream along the gravel road that parallels the river on the White Mountain Apache Tribal Lands (river right).

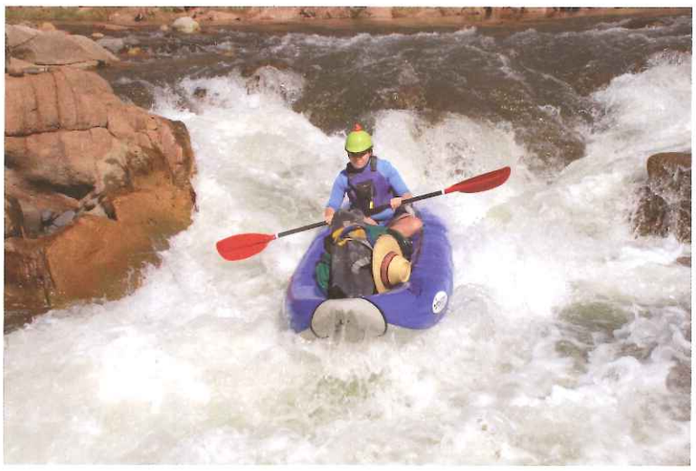

Cibecue Creek
Mile 6.5
Raft Ripper Rapid (II)
Cibecue Rapid (II)
Cibecue River Access
Three Way Rapid (II)
Exhibition Rapid (III)
Apache Road 1
Second Campground River Access
Tonto National Forest (river left)
White Mountain Apache Tribal Lands (river right)
Tonto National Forest San Carlos Indian Reservation
Mother Rock (II)
Grumman Rapid (III)
Mile 2.0
Mile 2.7
Mile 1.6
Kiss & Tell Rapid (II)
Commercial River Acess
Non-commercial River Access
Overboard Rapid (III)
Mile 0.1
Island Rapid (III)
Maytag Rapid (III)
Bump & Grind Rapid (II)
Mile 0.8
San Carlos Indian Reservation (river left)
Map 1

Mile 8 to Mile 15 - Map 2

Start at the bottom! Text reads from bottom of page to top on all map pages along with the river!

Mile 14.5, Left - **Mile 14.5 Camp** is a nice, large camp on a sandy bench above the river.

Mile 13.6 - **White Rock Rapid** begins just after a sharp right bend of the river. This is a long rapid with exposures of Ruin Granite on both sides of the river. Boulders in the channel create a number of holes and obstacles to avoid.



Leah runs the left-side chute of Rat Trap Rapid in an inflatable kayak at low water.

Mile 13.4 - The river jogs left around a cobble bar at **Rat Trap Rapid**. The upstream end on river left has a channel that drops over bedrock, funneling water into a turbulent maelstrom that can be avoided by going right when higher water levels permit. Scout on river left.

Mile 13.3 - **The Cheese Rapid** is an easy, wide boulder and cobble bar that finishes at a short pool above Rat Trap Rapid.

Mile 13.3, Right - **Mile 13.3 Camp** is a large camp on a sandy bench above the river. Landing here when the water is low can be difficult due to a cobble bar that becomes exposed.

Mile 13.2 - White **Ruin Granite** is exposed at river level from here to the beginning of Gleason Flat at mile 17.7.

Mile 12.0, Right - **Ancestral Puebloan ruins** are located at the base of the cliff above the river. Remember that this area is within the closure area of the White Mountain Apache Tribe, so visiting the ruins is not permitted. Enjoy them from the river only.

Mile 12.0, Left - **Mile 12 Camp** is a large camp on an open gravel bar.

Mile 11.9 - **Rock Garden Rapid** is described by its name. There are a number of rocks and holes to dodge in this rapid.

Mile 11.4, Left - **Mile 11.4 Camp** has a small landing among the overhanging riverside tamarisk. The camp is just across the river from a large, blocky boulder that fell into the river from the cliff above. This is a medium-size camp with scattered brush for some wind shelter.

Mile 11.0, Left - **Walnut Falls** spills into the canyon from the left. Camping is not allowed within 100 yards.

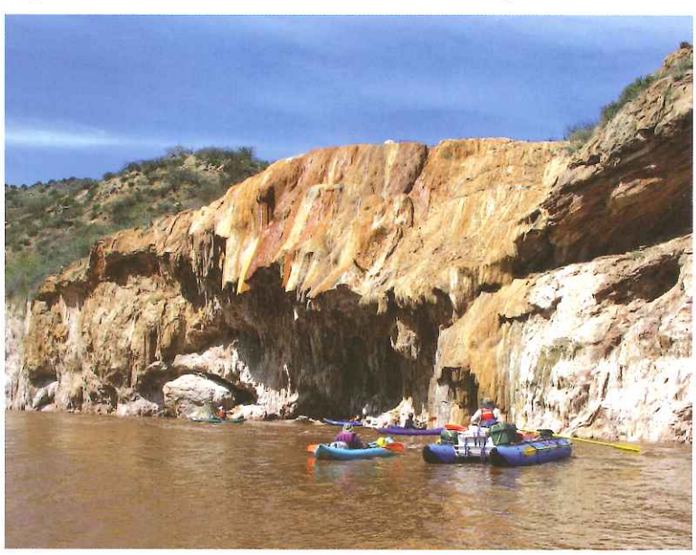
Mile 10.9 - **Little Boat Eater Rapid** starts with a drop over boulders and cobbles with most flow on river left. A nasty reversal with a small "keeper" pocket forms where the current runs over a hard rock ledge near the left bank. Stay right of this.

Mile 10.2 - **Ledges Rapid** begins where the river constricts and jogs left around a cobble bar. It then widens and flows over a series of low quartzite ledges. Watch for a few scattered boulders in the river.

Mile 10.2, Left - **Mile 10.2 Camp** is a larger version of Salt Banks Camp at the downstream end of the terrace.

Mile 10.1, Left - **Salt Banks Camp** is located opposite the downstream end of the salt banks. This is a medium-size camp on the low sandy terrace above the river. Scattered tamarisk provide some shelter from the wind.

Mile 10.0, Right - The **Salt Banks** are evaporite (salt and mineral) deposits. Water seeping through the Mescal Limestone and diabase below it runs out of the ground where it hits the relatively impermeable Dripping Springs Quartzite. A 1954 study estimated that the salt banks contribute up to 140 tons of dissolved solids (mostly salt) per day to the river, which has a noticeable salty taste when the river is low.



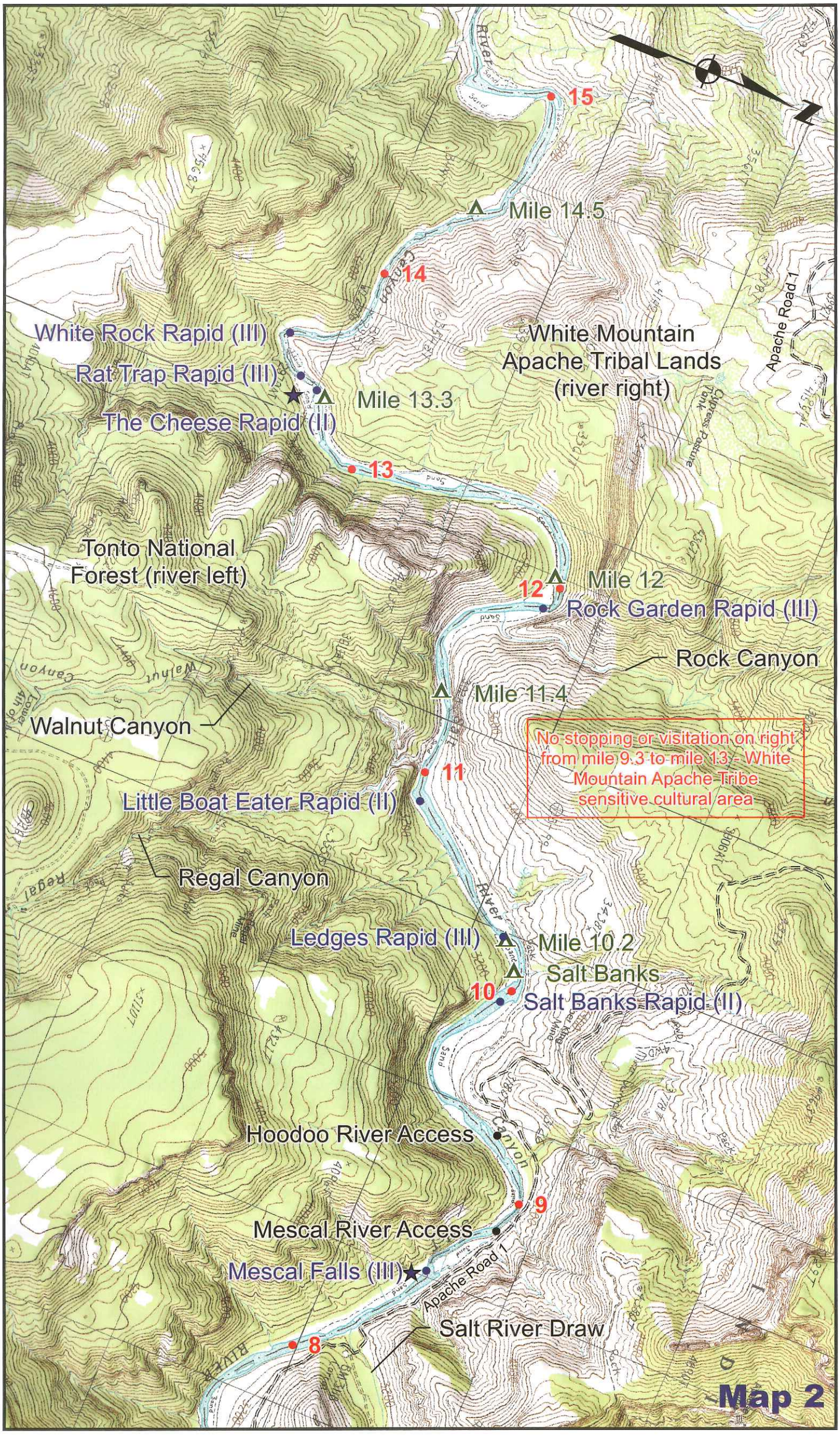
Evaporite deposits at the Salt Banks. Visitation of this site is prohibited by the White Mountain Apache Tribe. (Patrick Florence)

Mile 9.9 - The river runs over another cobble bar at **Salt Banks Rapid** with most of the flow funneling into a channel on the right. A minor fault crosses the river here bringing Dripping Springs Quartzite back up to river level.

Mile 9.3, Right - **Hoodoo River Access** is an unimproved river access point at the end of the day-trip section.

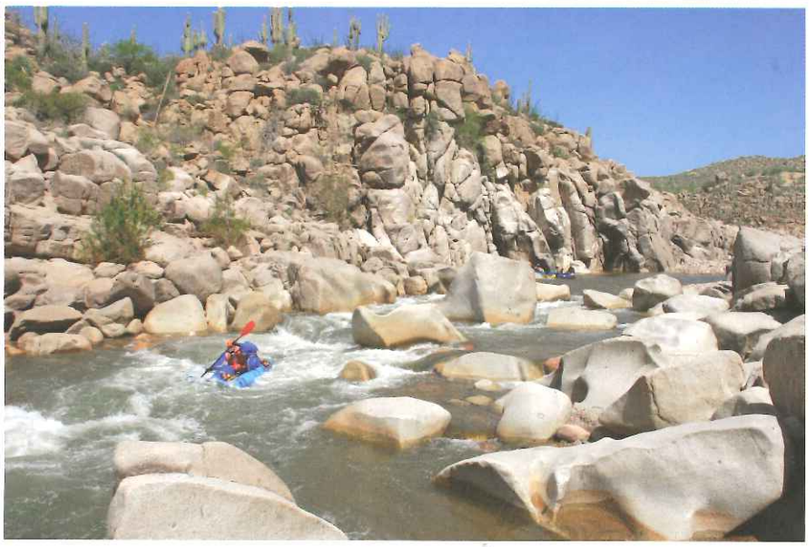
Mile 8.9, Right - **Mescal River Access** is an unimproved river access point.

Mile 8.6 - **Mescal Falls** occurs where the river jogs left over a boulder and cobble bar. The deepest channel begins at the upstream end of the bar on river left. This channel tends to funnel water at the top and develop a nasty reversal over ledges on the left that you should avoid.


15
Mile 14.5
14
White Rock Rapid (III)
Rat Trap Rapid (III)
Mile 13.3
The Cheese Rapid (II)
White Mountain
Apache Tribal Lands
(river right)
Apache Road 1
13
Tonto National
Forest (river left)
12
Mile 12
Rock Garden Rapid (III)
Rock Canyon
Mile 11.4
Walnut Canyon
No stopping or visitation on right from mile 9.3 to mile 13 - White Mountain Apache Tribe sensitive cultural area
11
Little Boat Eater Rapid (II)
Regal Canyon
Ledges Rapid (III)
Mile 10.2
Salt Banks
10
Salt Banks Rapid (II)
Hoodoo River Access
9
Mescal River Access
Mescal Falls (III)
Apache Road 1
Salt River Draw
8
Map 2

Mile 15 to Mile 20 - Map 3

Start at the bottom! Text reads from bottom of page to top on all map pages along with the river!



Looking upstream at Granite Rapid during low water.

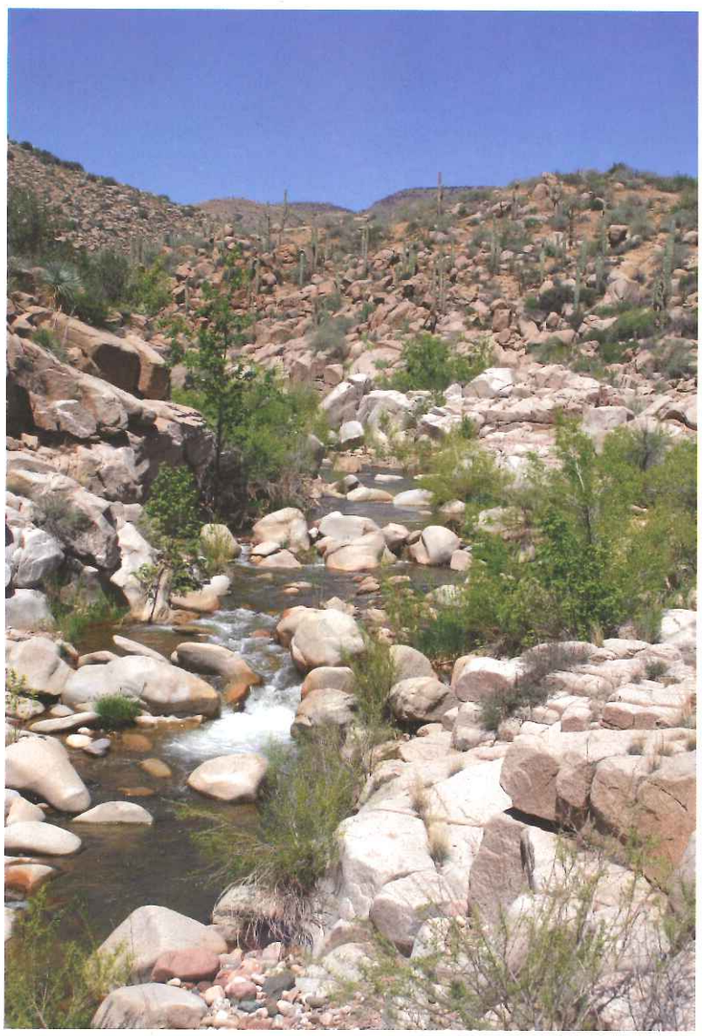
Mile 19.6, Right - **Mile 19.6 Camp** is a large camp with scattered trees on the bench above the river. This site is accessible by road and is used frequently as a commercial take-out.

Mile 19.3, Left - **South Gleason River Access** is accessible from Forest Road 303B, which defines the extreme eastern boundary of the Salt River Canyon Wilderness on river left. Close the gate after you pass though. The final four miles of Forest Road 303B descending into the canyon are rugged and require four wheel drive.

Mile 19.2 - **Gleason Rapid** is a minor rapid over low rocks and boulders.

Mile 18.3, Right - **Mud Springs River Access** is a rarely used access point reached via a road that is poorly maintained and only lightly travelled near the river.

Mile 18.0, Left - **Mile 18.0 Camp** is another large camp on the sandy bench above the river. This site is accessible by a rough four-wheel drive road, so you may encounter car campers here.



Canyon Creek has perennial water, but the hike requires much scrambling over blocks of Ruin Granite.

Mile 17.9, Left - **Mile 17.9 Camp** is a large camp on the sandy bench above the river. Land among the granite bedrock projections.

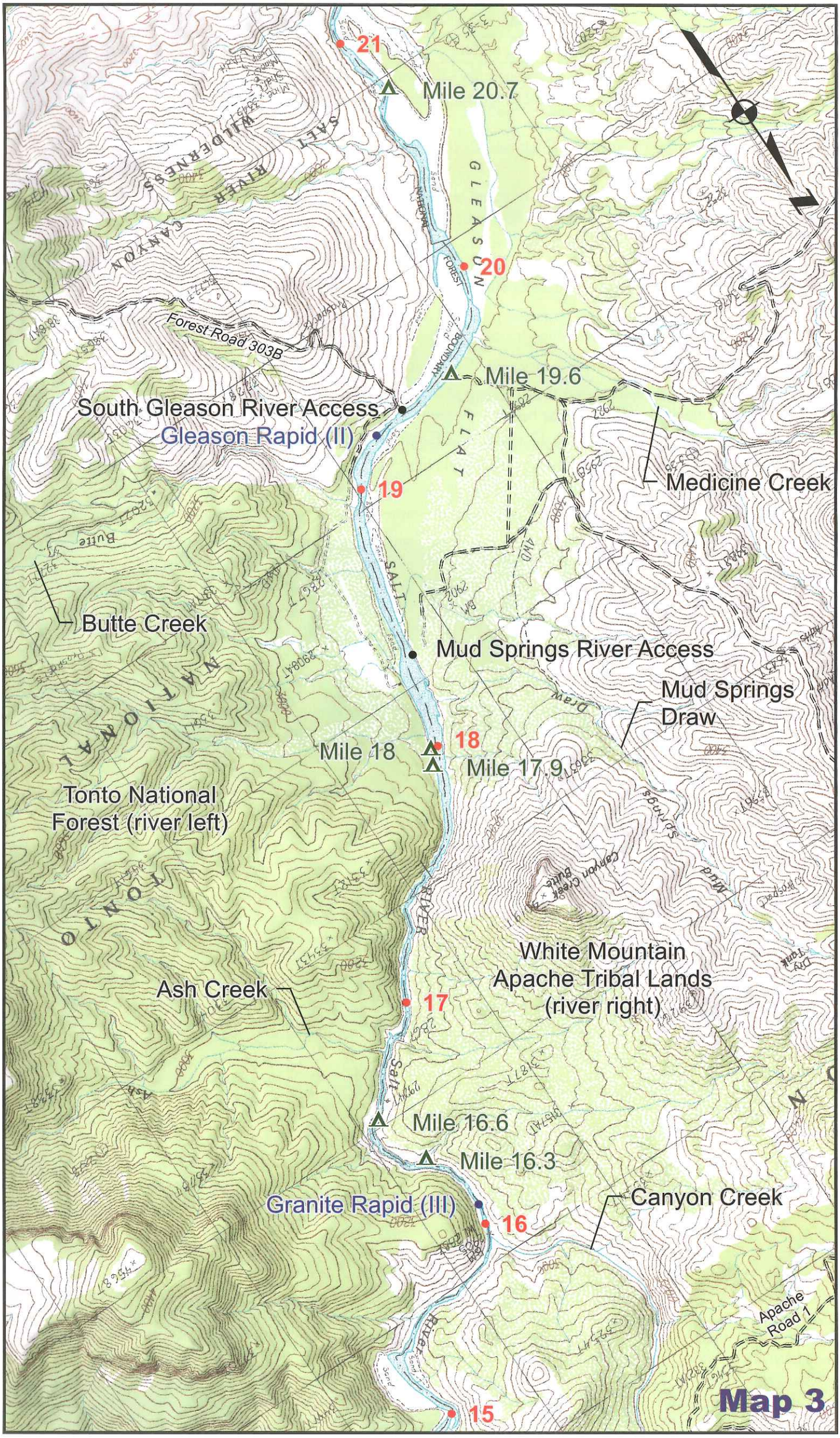
Mile 17.7 - The river corridor leaves the Ruin Granite and slices mostly through **Quaternary alluvium** across Gleason Flat. The lower slopes on both sides of Gleason Flat are Whitetail Conglomerate.

Mile 16.6, Right - **Mile 16.6 Camp** is located at the foot of a small rapid and across from a low granite cliff. This is a small to medium camp on a sloping sandy bar.

Mile 16.3, Right - **Mile 16.3 Camp** is a small camp at the mouth of an unnamed side canyon with a couple of sandy tent spots among the rocks.

Mile 16.1 - **Granite Rapid** is in a narrow part of the canyon constricted by bedrock walls of white granite. Scouting here is difficult. Granite boulders block the river, particularly on the left which is impassable at low water and develops a big hole at higher water. The right side has a narrow channel that is navigable at all water levels.

Mile 16.0, Right - **Canyon Creek** is a major tributary that begins many miles away just under the Mogollon Rim. You can land at the mouth of the creek if you plan to hike here, but it is at the top of a small riffle and requires a quick move. Alternatively, you can land upstream and scramble over the rocks. The creek flows year-round and has a number of nice pools. An aboriginal turquoise quarry near the mouth of this drainage was visited by Dr. Emil Haury in 1930 as a part of his archeological survey.


21
Mile 20.7
SALT RIVER CANYON WILDERNESS
GLEASON FLAT
20
Forest Road 303B
Mile 19.6
South Gleason River Access
Gleason Rapid (II)
19
Medicine Creek
Butte Creek
SALT RIVER
Mud Springs River Access
Mud Springs Draw
18
Mile 18
Mile 17.9
Tonto National Forest (river left)
TONTO NATIONAL
White Mountain Apache Tribal Lands (river right)
Ash Creek
17
Mile 16.6
Mile 16.3
Granite Rapid (III)
16
Canyon Creek
Apache Road 1
15
Map 3

Mile 20 to Mile 26.7 - Map 4

Start at the bottom! Text reads from bottom of page to top on all map pages along with the river!

Mile 26.6 - **Devils Pendejo Rapid** occurs where the river bends around a cobble bar on the right. The rapid runs out against a low cliff on the left, and bonus rocks appear at the base of the cliff during low water. Pull right to stay off the cliff and rocks.

Mile 26.1, Left - **Mile 26.1 Camp** is a small camp with a low sandy area by the river and an upper camping area behind tamarisk.

Mile 25.5, Left - **Hess Canyon Camp** is a medium-sized camp at the mouth of the canyon. There are a couple of sandy camp spots on the terrace behind the cobble beach on the upstream side of the creek. Avoid camping here in wet weather.

Mile 24.1, Left - **Mile 24.1 Camp** is an open, medium-size camp with sandy camping areas on a low bench. A few tamarisk at water's edge may provide a bit of wind protection depending on the direction.

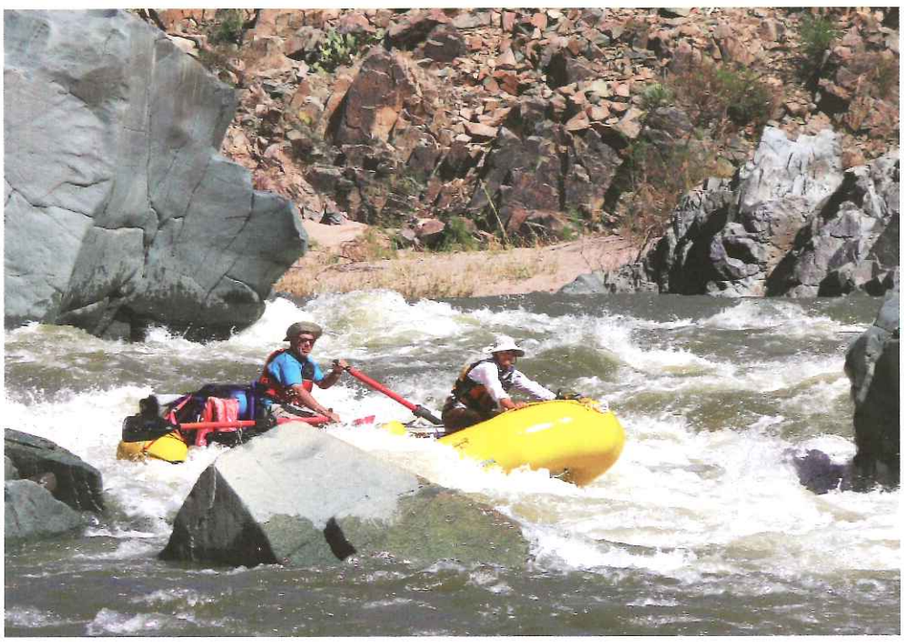
Mile 24.0, Left - **Mile 24 Camp** is a large camp located on top of a steep sandy terrace at the mouth of an unnamed wash. Exercise caution camping here during wet weather.

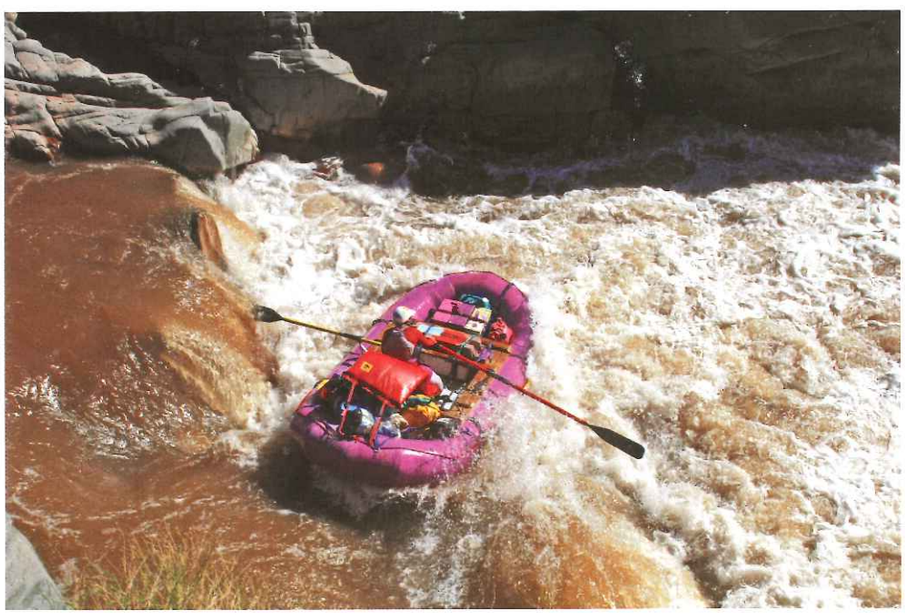
Mile 23.8, Right - **Mile 23.8 Camp** is a large camp on a sandy terrace behind a sloping cobble beach.

Mile 23.6, Right - **Hackberry Spring Wash Camp** is a large camp on a sandy, brushy bench. The landing is between riverside vegetation and angular bedrock projections.

Mile 22.7, Left - **Mile 22.7 Camp** is located at the upstream end of a large cobble bar. There are a few good sleeping spots on the low part of the beach and a couple more on an upper terrace. The canyon visibly widens downstream from here.

Mile 22.5, Left - **Mile 22.5 Camp** is a very nice, medium-large campsite on a sandy bar above the river.





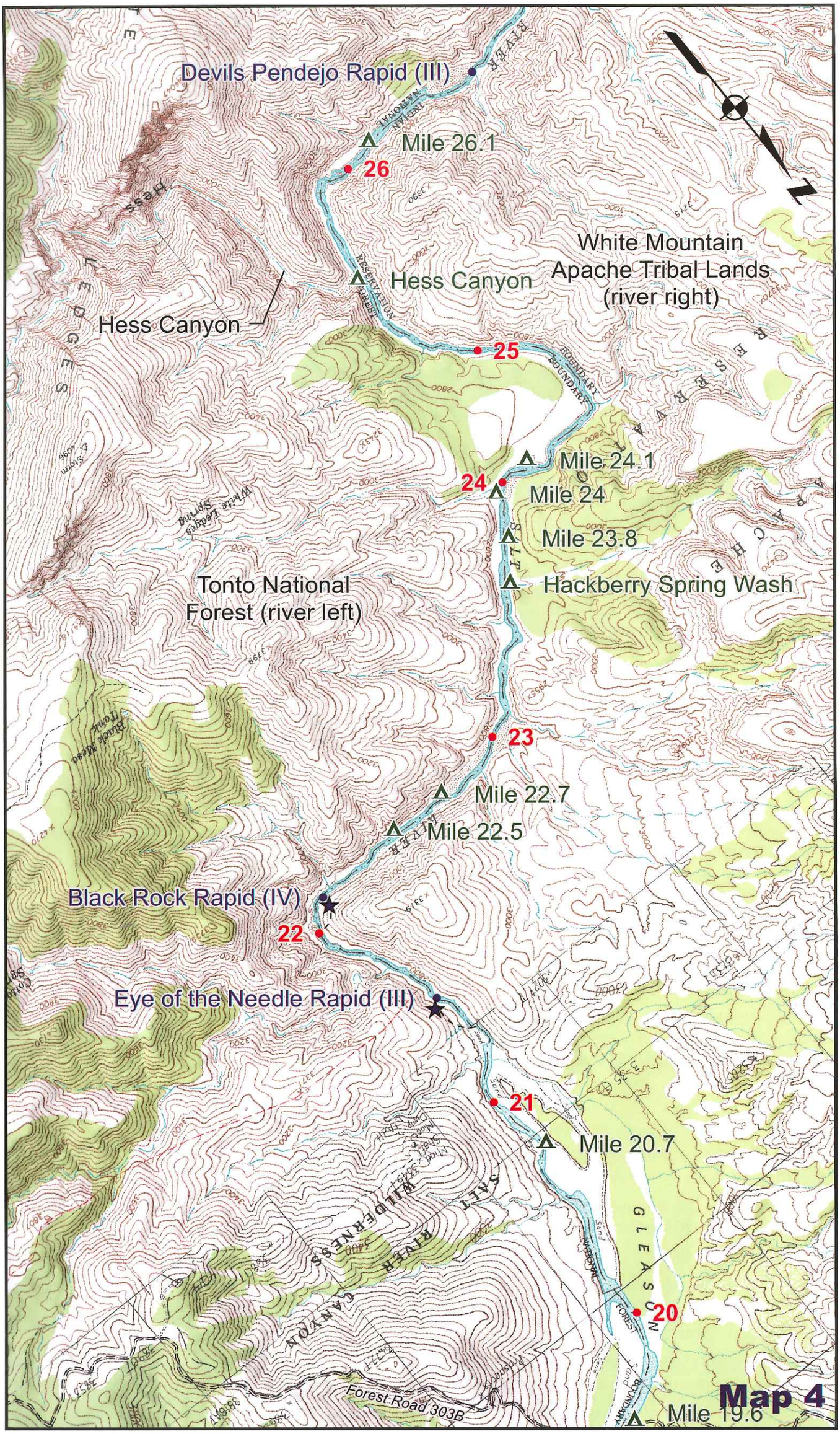
Black Rock Rapid is located around a blind corner. The upper photo is looking upstream at the rapid at about 2,200 cfs. The bottom photo is looking down on the main drop at about 600 cfs. A high-water overflow channel is out of view on river left. (top - Patrick Florence, bottom - Duwain Whitis)

Mile 22.2 - **Black Rock Rapid** is located just past a blind right-hand bend. At rafting (medium to high) water levels, scout this by landing on the right just above the bend and scrambling over the rocks. At low water with inflatable kayaks, you can land on the left just below the bend since you will probably portage this one on the left. The main drop on river right is a sharp drop over bedrock and boulders. A bedrock projection separates the main drop from a high water overflow channel on the left, which also ends with a sharp drop. The overflow channel can be run at very high water.

Mile 21.5 - **Eye of the Needle Rapid** should always be scouted by landing well upstream on the left and hiking downstream; otherwise, you may not be able to pull over because of the Class II entrance rapid. The river is funneled between bedrock walls, and a large bedrock projection blocks the right and middle of the river. You are forced to take the narrow left channel except at high water (above 3,200 cfs) when the left gets nasty and a sneak route opens on the far right. Ship your oars!

Mile 21.2 - The canyon constricts as the river cuts through the **Redmond Formation**, which remains at river level until mile 30.7, a short distance upstream from Blackjack Wash. The Redmond is overlaid by the Whitetail Conglomerate, which comes close to the river in a few locations through this reach.

Mile 20.7, Right - **Mile 20.7 Camp** is a large camp on a rough, open cobble bar with a few sandy areas.


Devils Pendejo Rapid (III)
Mile 26.1
26
Hess Canyon
Hess Canyon
White Mountain
Apache Tribal Lands
(river right)
25
Mile 24.1
24
Mile 24
Mile 23.8
Hackberry Spring Wash
Tonto National
Forest (river left)
23
Mile 22.7
Mile 22.5
Black Rock Rapid (IV)
22
Eye of the Needle Rapid (III)
21
Mile 20.7
20
Forest Road 303B
Mile 19.6
Map 4

Mile 26.7 to Mile 34.5 - Map 5

Start at the bottom! Text reads from bottom of page to top on all map pages along with the river!

Mile 34.3 - **Cliffhanger Rapid** is a minor rapid just upstream from a huge bedrock projection that splits the river. The current rejoins below the bedrock and runs against a cliff on river left.

Mile 34.3, Left - **Cliffhanger Camp** is wonderful medium-size camp that's hidden between the riverside vegetation and a broken cliff. Look for a sloping landing and a break in the vegetation just past projecting ledges on river left.

Mile 33.7, Right - **Mile 33.7 Camp** is a nice, small to medium camp on a sandy flat at the mouth of a side canyon.

Mile 32.0 - **Sleeper Rapid** is a straightforward run, but watch for a hole that forms near the top of this rapid on the right. The river leaves the Hess Canyon Group and reenters the Redmond Formation here.

Mile 31.9, Right - **Mile 31.9 Camp** is a small sandy camp surrounded by bedrock above the river. There is no firewood here, so collect it upstream if you plan to have a fire.

Mile 31.8 - **Corkscrew Rapid** is a sharp two-part drop over wedged boulders. The two parts run together and the boulders are submerged at medium water levels, and the current will tend to carry you into the right wall below. You can scout this from your boat or by landing on the left and scrambling over the rocks. Very low water usually dictates a short but awkward and slippery portage on the left.

Bottoms up at Quartzite Falls, 1,500 cfs. (Patrick Florence)

Mile 31.7 - You will know you are approaching **Quartzite Falls** when you find yourself travelling down a straight stretch with walls of the steeply dipping White Ledges Quartzite on both sides of the river. Quartzite Falls begins with a broken fin of quartzite that cuts across the river from right to left upstream from the main drop. You should scout by landing well upstream and climbing to the top of the ridge from the last gravel beach on the left before the river enters the approach canyon. A left run is possible above 1,200 cfs. Another approach is to work your way past the quartzite fins, then run through the main drop on the right, taking care to spin your boat to hit the curling lateral from the right square-on. This wave flips many boats since they come though the main drop straight and hit the wave at an angle. If you flip, there is a short pool in which to recover before you come to the next challenge, Corkscrew Rapid. At low water in an IK, simply thread your way around the right side of the boulders.

Mile 31.0, Left - **Black Jack Wash Camp** is a large, open site with camping on sandy spots behind the ledges near the river. Landing here may be difficult at low water due to a channel that sometimes gets cut off from the main current. Looking downstream, you will see the steeply dipping White Ledges Quartzite that the river cuts through as it approaches Quartzite Falls. Look upstream, and the narrow spot in the river cuts through that very same layer of rock you will pass through at Quartzite Falls.

Mile 30.7 - The river enters the distinctively steeply dipping rocks of the **Hess Canyon Group** for just over a mile.

Mile 29.8 - **The Maze Rapid** is aptly named. It is located at a sharp right bend, and the action upstream may let this one sneak up on you. Watch for the sharp bend and a large rock/hole on the right side of the river. You can pull over to scout in the slack water upstream. There are at several more large rocks on the left and in the center that must be cleared by passing right, but the current will tend to carry you left. At high water, there is a sneak route to the right of the first rock that will allow you to miss most of the nastiness downstream.

Mile 29.4 - **Pinball Rapid** is at the entrance to Jump Off Canyon, and things get interesting here. Bedrock will constrict the river for much of the next five miles. Scout this rapid by landing upstream on the right. Bedrock projections on the left and right in this rapid require a bit of maneuvering.

Mile 29.2 - **Lower Corral Rapid** can create nasty surprises for the unwary. The river funnels between a cobble bar on the right and bedrock ledges on the left with boulders/holes in the channel. Stay right of these if you can. At low water in inflatable kayaks, you'll take your licks unless you line or portage.

Mil 29.2, Right - **Lower Corral Canyon Camp** is a large sandy site at the mouth of the canyon. Be careful here in wet weather as the canyon may flash flood and put you in the river.

Mile 29.0, Right - The **White Mountain Apache Tribal Lands** end here. Downstream, both sides of the river are (mostly) in the **Salt River Canyon Wilderness** until you almost reach the bridge at Highway 288.

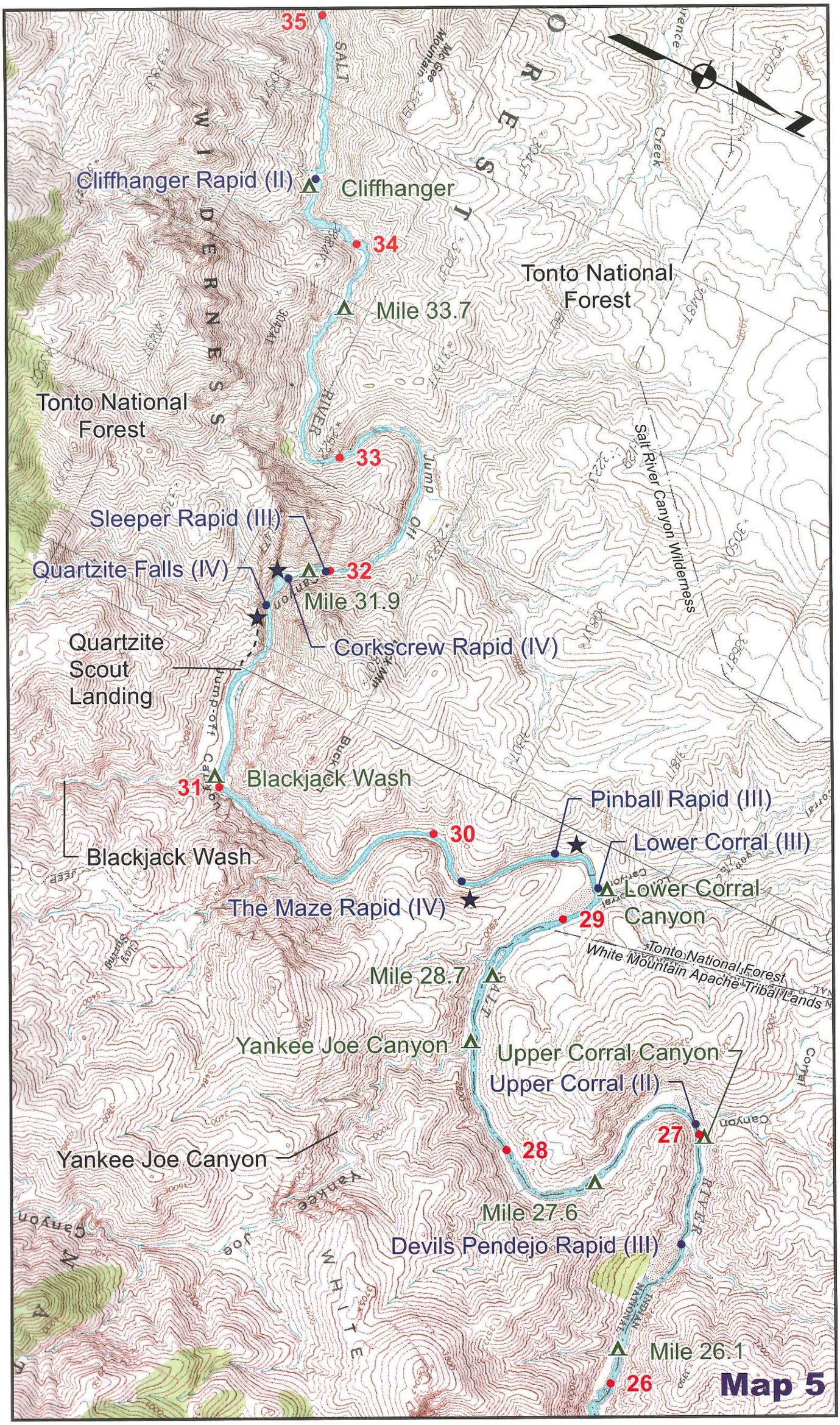
Mile 28.7, Right - **Mile 28.7 Camp** is a medium-size camp on an open sandy terrace.

Mile 28.4, Left - **Yankee Joe Canyon Camp** is a nice medium-size camp on a sandy terrace. The canyon is named for Joseph Yankie, who operated several mining claims in this area in the 1870s.

Mile 27.6, Left - **Mile 27.6 Camp** is a small camp on an upper sandy terrace. A beach is exposed at low water.

Mile 27.0 - **Upper Corral Rapid** is a straightforward drop over low boulders and cobbles followed a short distance later by the main part of the rapid with boulders and rock outcrops on the right.

Mile 27.0, Right - **Upper Corral Canyon Camp** is a large camp on a sandy terrace high above the river.


35
Cliffhanger Rapid (II)
Cliffhanger
34
Mile 33.7
Tonto National Forest
Tonto National Forest
33
Sleeper Rapid (III)
Quartzite Falls (IV)
32
Mile 31.9
Corkscrew Rapid (IV)
Quartzite Scout Landing
31
Blackjack Wash
Blackjack Wash
30
Pinball Rapid (III)
Lower Corral (III)
Lower Corral Canyon
The Maze Rapid (IV)
29
Mile 28.7
Yankee Joe Canyon
Upper Corral Canyon
Upper Corral (II)
27
28
Yankee Joe Canyon
Mile 27.6
Devils Pendejo Rapid (III)
Mile 26.1
26
Map 5
WILDERNESS
Salt River Canyon Wilderness
Tonto National Forest
White Mountain Apache Tribal Lands

Mile 34.5 to Mile 47 - Map 6

Start at the bottom! Text reads from bottom of page to top on all map pages along with the river!

Mile 46.8, Right - A prominent **eroded cliff of Tertiary conglomerate** is exposed above the river. Higher up the slope are eroded crags of Apache Leap Tuff.

Mile 46.0, Left - **Mile 46 Camp** is a medium-size camp behind the vegetation at the back of a wide cobble beach, which gets narrower as the water rises.

Mile 45.5, Left - **Mile 45.5 Camp** is a small, sheltered camp on a gravel terrace at the mouth of a side canyon.

Mile 45.2, Right - **Dry Creek Camp** is a medium-size brushy camp on a sandy bench.

Mile 44.8, Right - **Mile 44.8 Camp** is a large camp next to a group of large cottonwoods on a terrace next to the river.

Mile 44.6, Right - **Coon Creek Camp** is a wonderful medium-size camp under cottonwood and sycamore trees at the mouth of Coon Creek, another large tributary with a flowing stream. The landing for this camp is almost hidden among the riverside vegetation immediately upstream from the creek.

Mile 44.1 - **Redmond Rapid** is a minor riffle.

Mile 44.0 - The river crosses the **Cherry Creek Fault**,which is downthrust on the west (downstream) side, and enters an area of Tertiary sedimentary rocks. The dark rock of a basalt flow is visible on the right a short distance above the river.

Mile 43.4, Right - The low cliff next to the river is composed of **Tertiary conglomerate rocks**.

Mile 43.3, Right - **Mile 43.3 Camp** is a medium size camp with a sandy camping area. A wide sand and cobble beach is exposed at low water.

Mile 42.4 - The river leaves the Redmond Formation and enters **Quaternary terrace deposits**.

Mile 41.9, Left - **Desert bald eagles** are known to use the rocky spires near the river as a nesting site. Watch for them, but don't stop or do anything that might disturb them.

Mile 40.6, Left - **Mile 40.6 Camp** is a large, open camp on a sand and gravel beach.

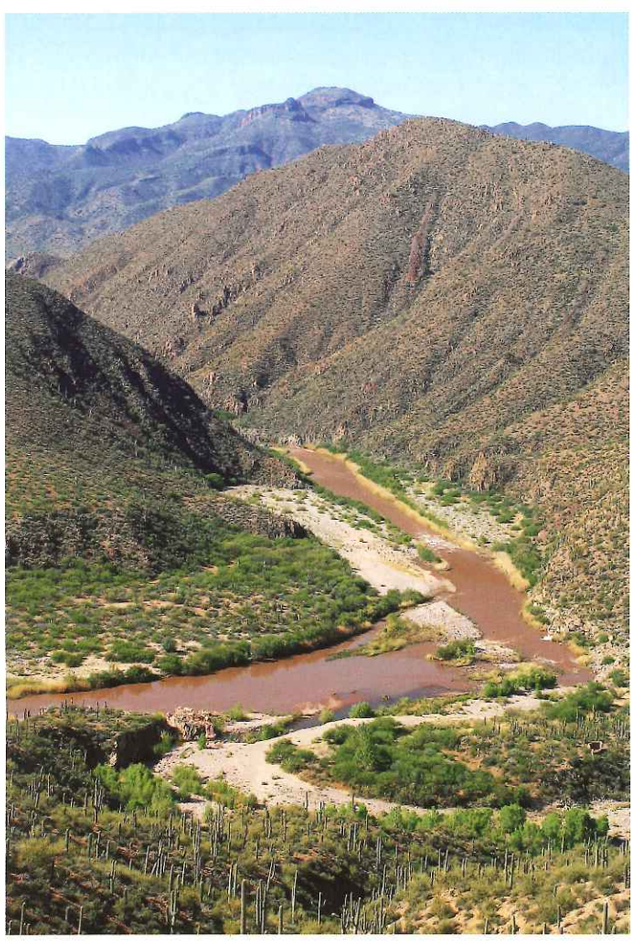
Mile 39.9, Right - **Mile 39.9 Camp** is a large camp with scattered sandy areas on the terrace above the river.

Mile 39.7 - The river slices through the **White Ledges Formation** one last time before reentering the Ruin Granite at mile 40.2.

Mile 39.2 - **Horseshoe Bend Rapid** is a long, easy rapid where the water runs over shallow cobbles.

Mile 38.8, Right - **Mile 38.8 Camp** is a very large camp on the sandy beach at the beginning of Horseshoe Bend.

Mile 38.4 to Mile 39.1, Left - The **boundary of the Salt River Canyon Wilderness** approaches the river through this stretch, so you may see motor vehicles or their evidence near the river in this area.



A butte just north of Cherry Creek Camp provides a spectacular panorama of the canyon. The final climb to the top is easiest on the east side of the butte.

Mile 37.9, Left - **Mile 37.9 Camp** is a huge camp on a low sand and gravel beach.

Mile 37.2 - Look at the rocks on your left and right. Recognize them? Yes, this is the **White Ledges formation** again, but there are no challenging rapids here.

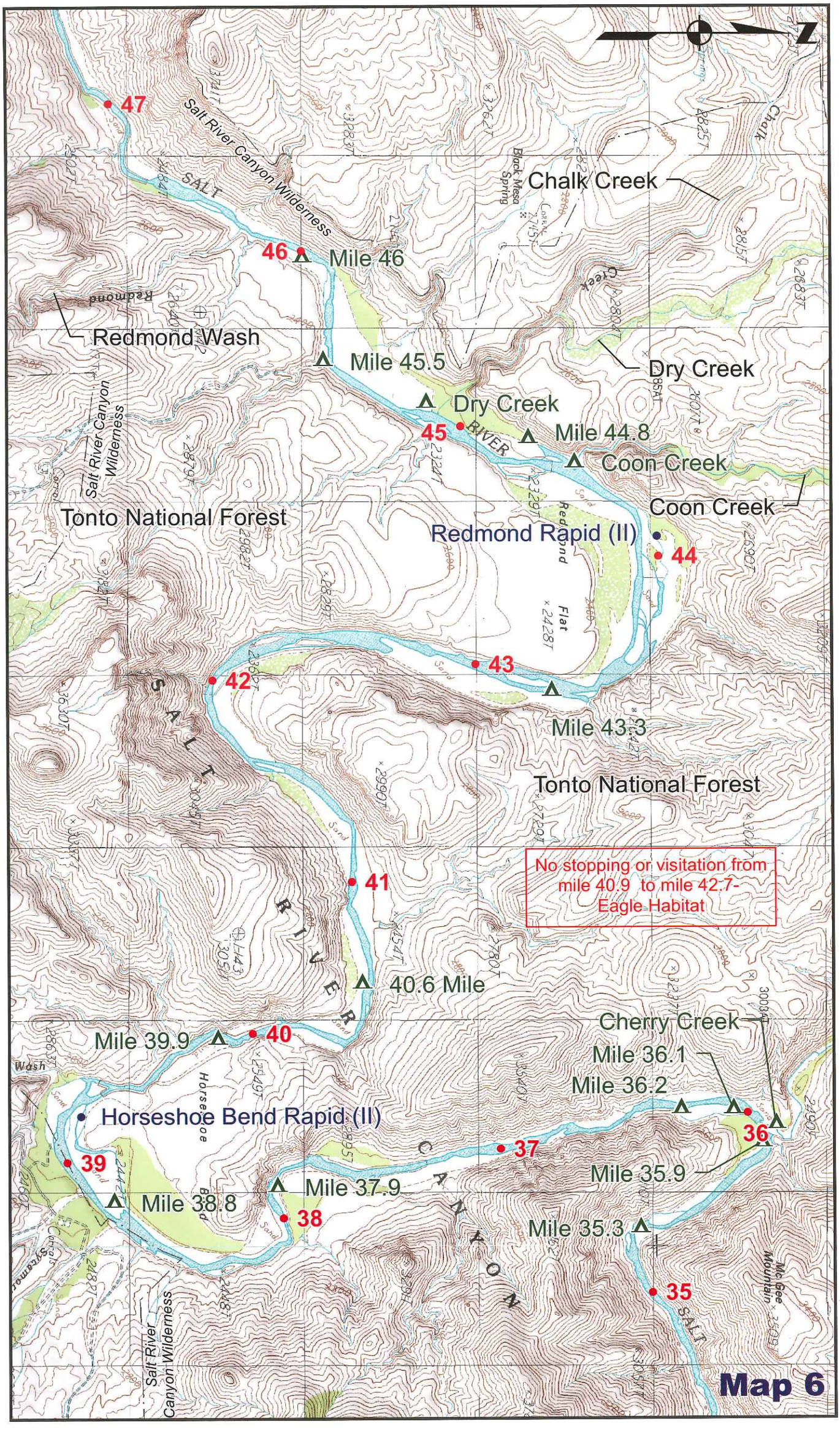
Mile 36.2, Left - **Mile 36.2 Camp** is a large camp on sand and gravel at the downstream end of a high water channel. The landing is a steep cobble bank.

Mile 36.1, Left - **Mile 36.1 Camp** is a large camp on a sandy beach. Landing here at low water requires crossing a cobble beach to get to the camping area.

Mile 35.9, Right - **Cherry Creek Camp** is a large camp on the level, sandy bench at the mouth of Cherry Creek. Access to the camp requires rowing into the creek's mouth. This is one of the largest tributaries you will pass, and it usually has flowing water. The creek, named for wild cherry trees at the headwaters, originates just under the Mogollon Rim about 50 miles to the north. The ruins of a stone cabin are located just uphill in the middle of the creek's meander bend. It was reportedly built by a trapper in the 1930s.

Mile 35.9, Left - **Mile 35.9 Camp** is a large site located on the open sandy point of the bend. The landing is just past the point of the bend at a break in the vegetation.

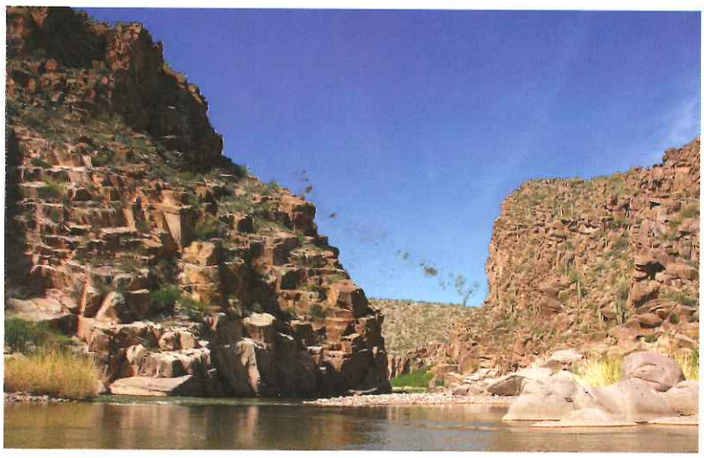
Mile 35.3, Right - **Mile 35.3 Camp** is a large camp on a sandy bar with a low terrace near the river and an upper area.


47
Salt River Canyon Wilderness
SALT
Chalk Creek
Black Mesa Spring
46
Mile 46
Redmond Wash
Mile 45.5
Dry Creek
Dry Creek
45
RIVER
Mile 44.8
Coon Creek
Coon Creek
Salt River Canyon Wilderness
Tonto National Forest
Redmond Rapid (II)
44
Redmond Flat
43
42
Mile 43.3
S A L T
Tonto National Forest
No stopping or visitation from mile 40.9 to mile 42.7- Eagle Habitat
41
R I V E R
40.6 Mile
Cherry Creek
Mile 39.9
40
Mile 36.1
Mile 36.2
Horseshoe Bend Rapid (II)
Horseshoe Bend
36
37
39
Mile 35.9
Mile 37.9
Mile 38.8
38
C A N Y O N
Mile 35.3
35
McGee Mountain
SALT
Salt River Canyon Wilderness
Map 6

Mile 47 to Mile 53 - Map 7

Start at the bottom! Text reads from bottom of page to top on all map pages along with the river!

This diversion dam is located 0.8 miles past the Highway 288 river access and is a significant hazard at high water.



A short but scenic gorge at mile 52 signals that your trip is almost over. Enjoy the view while you can!

Mile 53.5 - **Caution!** A **diversion dam** is located about 0.9 miles downstream from the Highway 288 River Access. The dam is about ten feet tall and stepped on the downstream face. A nasty reversal forms below the dam at higher water levels and has killed more than one person who attempted to float over it. The diversion dam and associated nineteen-mile canal were completed in 1906 to provide water used to generate electricity for construction of Theodore Roosevelt Dam.

Mile 52.6, Left - The **Highway 288 river access** is immediately downstream from the steel truss bridge. A two-lane paved ramp extends down to the river. The ramp was extended and widened in 2013. Turn off Highway 288 just south of the bridge to get to the ramp in your vehicle.

Mile 52.3 - The **river crosses another fault** that is downthrust on the west (downstream) side and passes through Apache Leap Tuff from here to the boat ramp.

Mile 50.5, Left - **Mile 50.5 Camp** has a large, low beach area and a huge upper sand and cobble terrace.

Mile 49.6, Left - **Mile 49.6 Camp** is a large, low, open camp on a sand and cobble beach.

Mile 49.5, Right - **Mile 49.5 Camp** is a large, level sandy camp behind a high, sloping cobble bank.

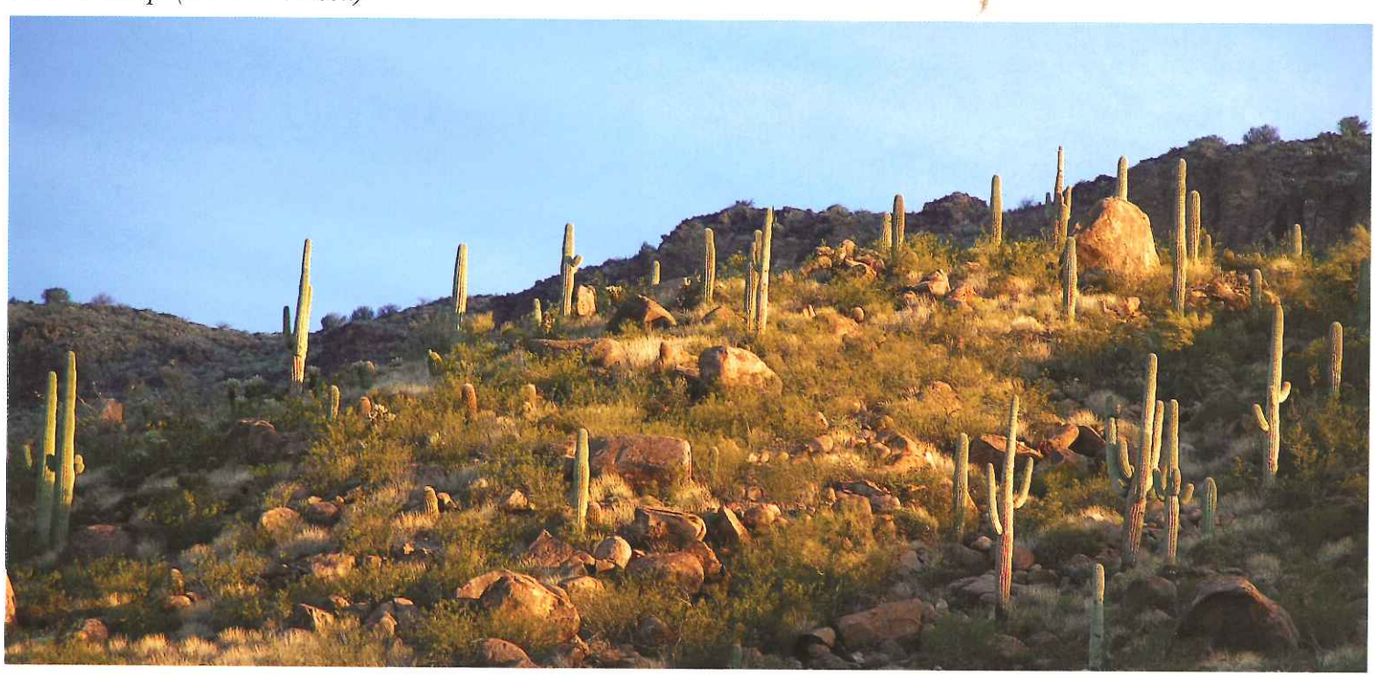
Mile 49.1 - The **river crosses a fault** that is downthrust on the west (downstream) side. The river leaves the Ruin Granite and enters Tertiary sedimentary rocks, which will continue to the Highway 288 river access.

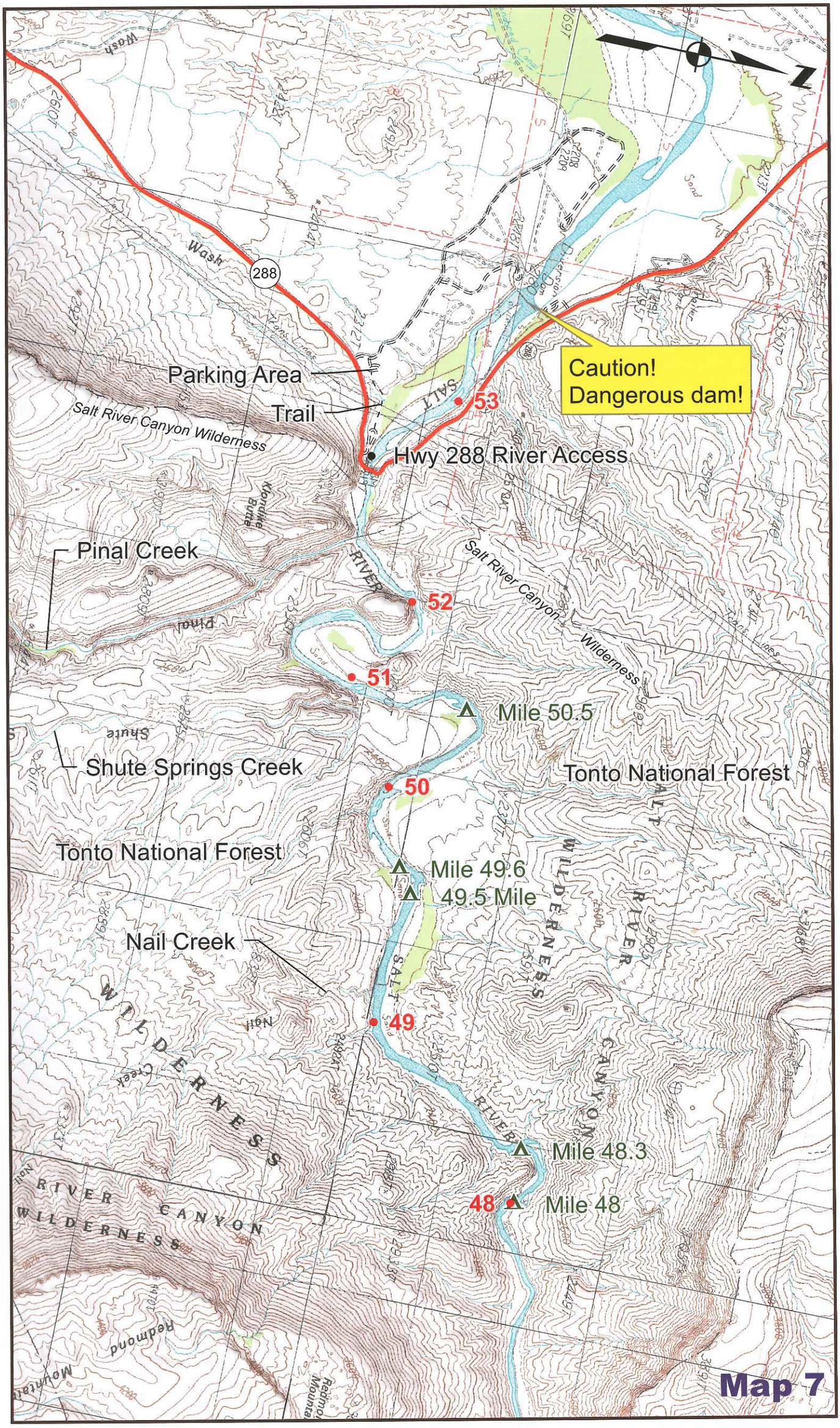
Mile 48.3, Left - **Mile 48.3 Camp** is a medium-sized site with a nice sandy beach area and a few sandy camp spots on the upper terrace.

Mile 48.0, Right - **Mile 48 Camp** has a large low-water beach and a sandy upper terrace.

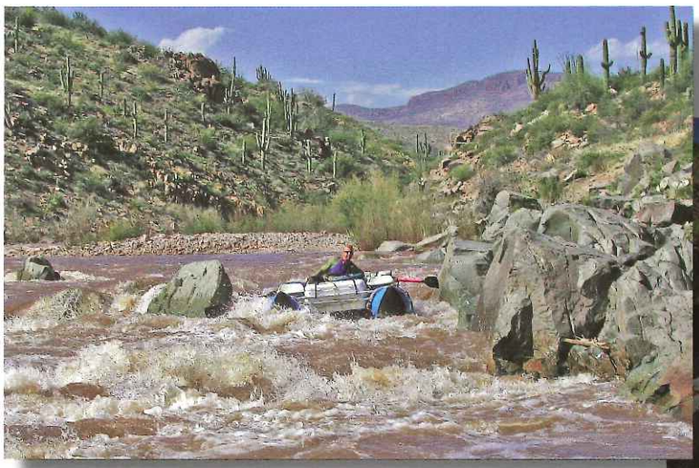
Mile 47.2 - **Ruin Granite** reappears at river level.

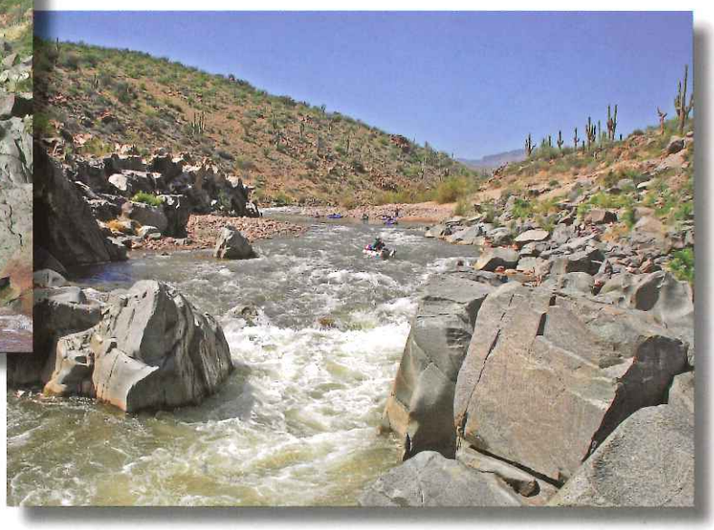
Sunrise highlights the saguaros and rocks on the slope above Mile 48 Camp. (Barbara Vinson)



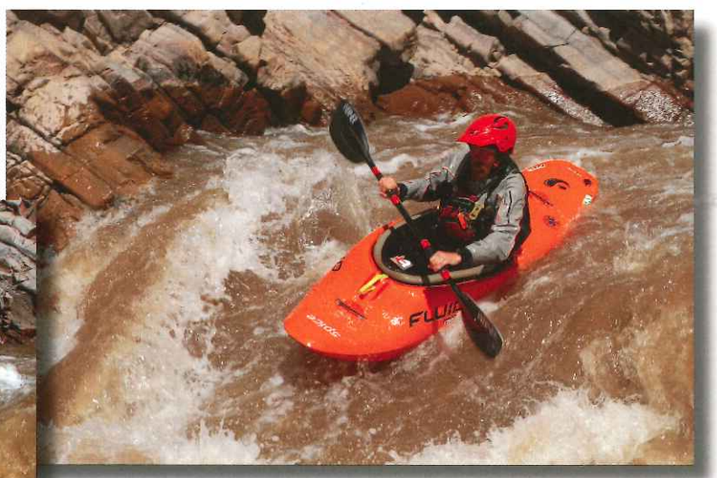

Parking Area
Trail
Salt River Canyon Wilderness
Hwy 288 River Access
53
Caution!
Dangerous dam!
Pinal Creek
52
51
Mile 50.5
Shute Springs Creek
50
Tonto National Forest
Mile 49.6
49.5 Mile
Nail Creek
49
Mile 48.3
48
Mile 48
Map 7

Etcetera

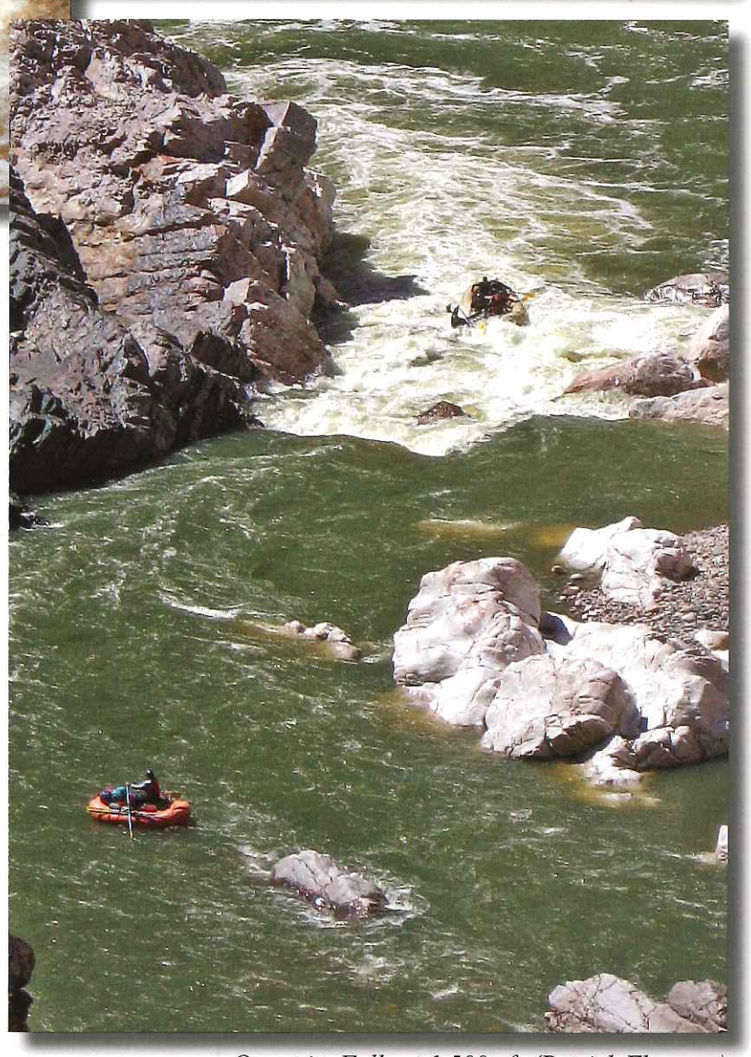




Eye of the Needle Rapid at 1,500 cfs (above, Patrick Florence) and 250 cfs (right, Duwain Whitis.) The water will just cover the pointed rock on the right side of the slot (left side in the photos) at 2,500 cfs.

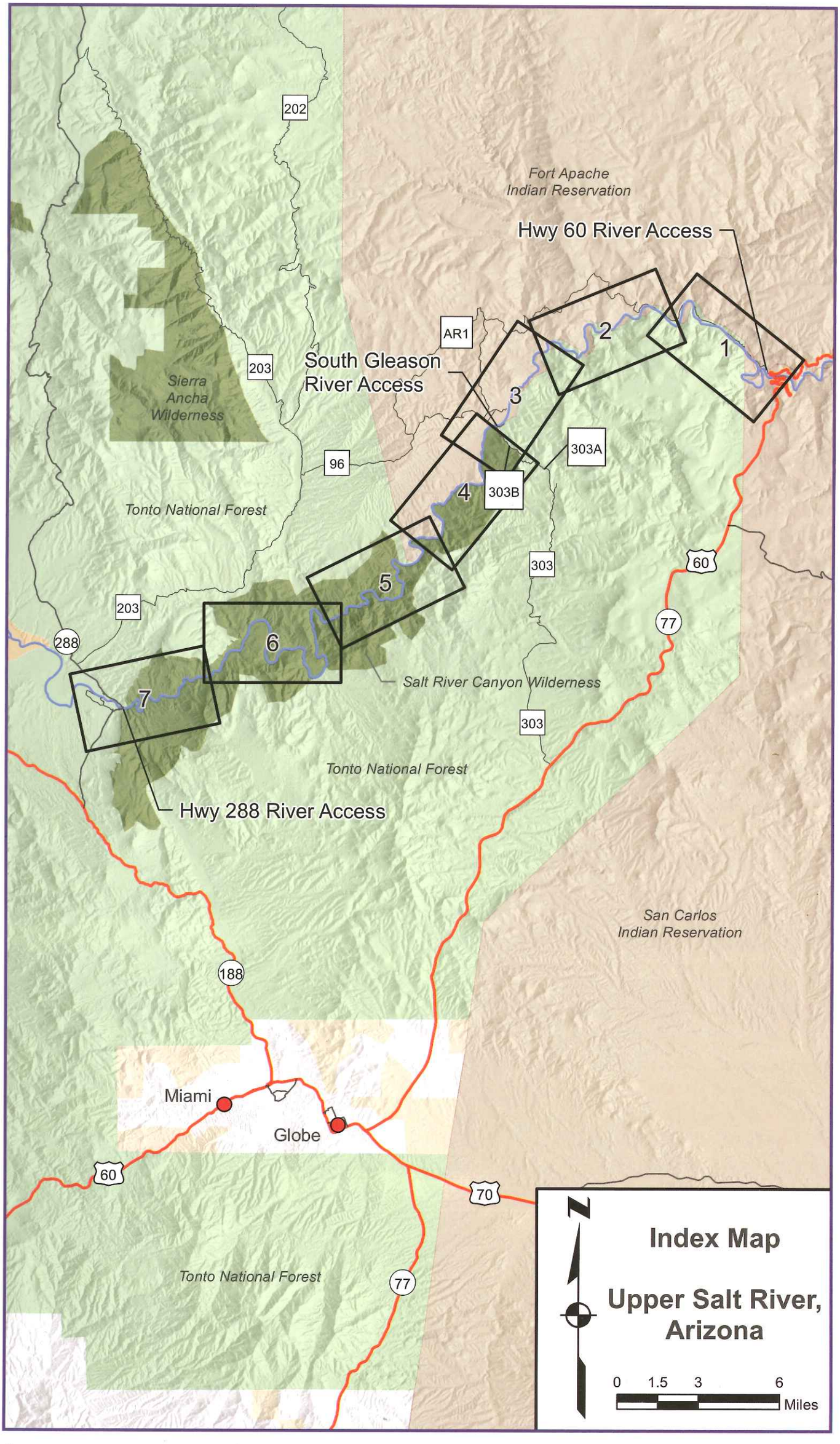


A rafter and kayaker run Corkscrew Rapid at 600 cfs.



Quartzite Falls at 1,500 cfs (Patrick Florence)

Saguaro detail (Barbara Vinson)


Fort Apache
Indian Reservation
Hwy 60 River Access
South Gleason
River Access
Hwy 288 River Access
Sierra
Ancha
Wilderness
Tonto National Forest
Salt River Canyon Wilderness
San Carlos
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Index Map
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0 1.5 3 6
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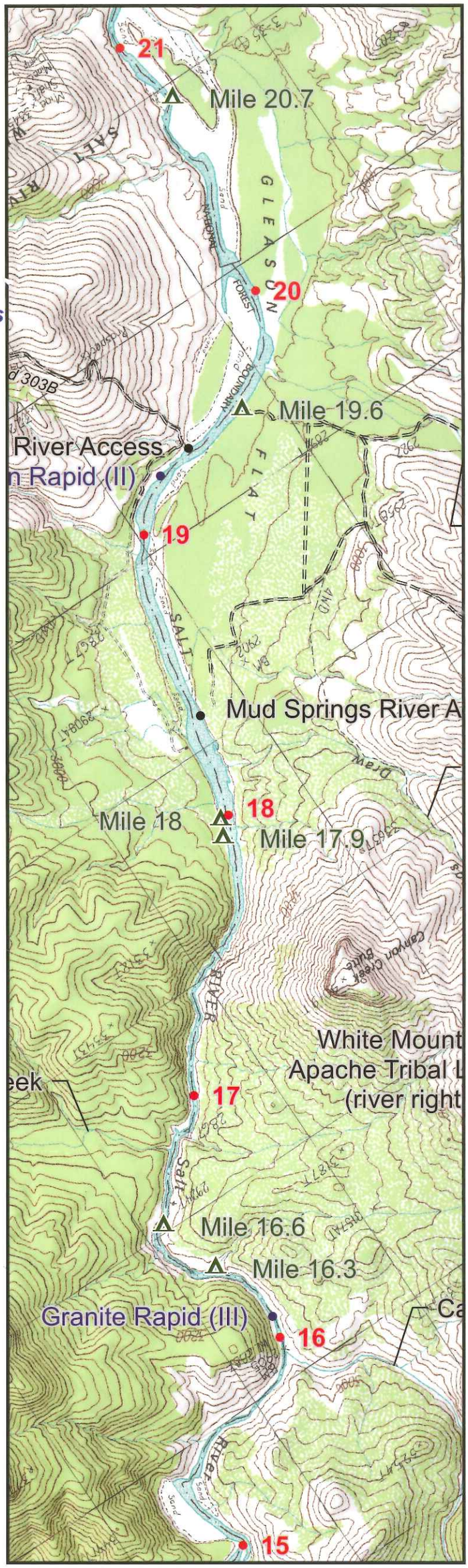

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