

## ON THE GROUND (continued)

### *Restoring Fossil Creek: A Collaborative Effort*

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A tributary to the Verde River in central Arizona, Fossil Creek has had the vast majority of its flow diverted to power plants since the early 1900s. That changed on June 18, 2005, when the Arizona Public Service Company (APS) decommissioned the Childs and Irving hydroelectric facilities and stopped diverting much of the creek's base flow. Fossil Creek once again flows freely. On top of that, multi-agency efforts have restored the creek's native fishery.

The Childs Power Plant was built in 1909 on the banks of the Verde River and was one of the first hydroelectric power plants in the West. Electricity generated there was used by the mining industry in the Jerome area, and by large irrigation companies and individual farmers in the Verde Valley



*Fossil Creek, before and after project decommission.*

to run pumps to irrigate thousands of acres of land. In response to increasing power demands, the Irving Power Plant was built in 1916 at Fossil Creek. Power for these plants came from diverting almost

the entire discharge of the Fossil Springs complex—nearly 46 cubic feet per second. In their heyday these power stations supplied all the electrical needs of Yavapai County and generated nearly seven



megawatts of electric power combined.

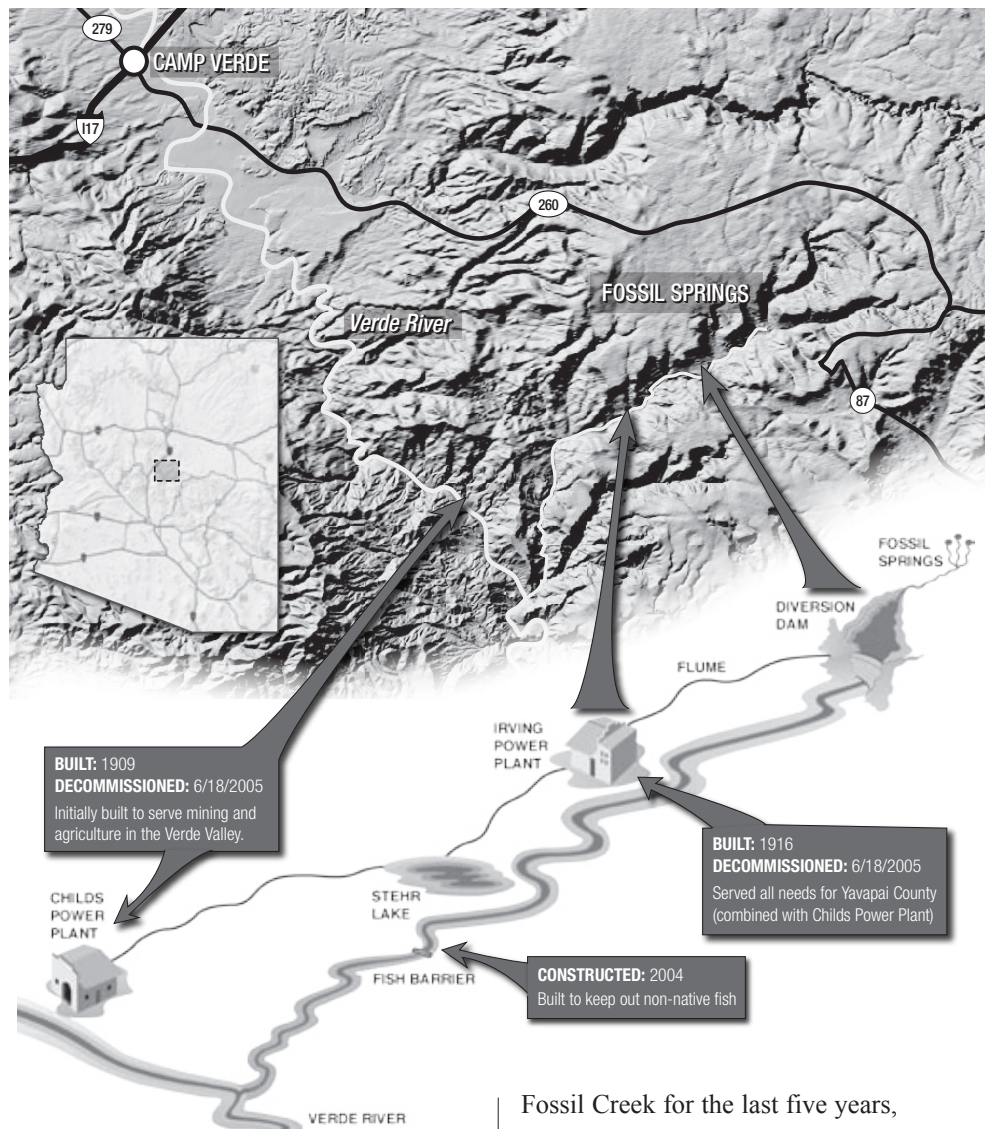
With more than 60 springs located along a 1,000-foot reach, discharging at a near-constant temperature of 72 F, Fossil Creek is one of Arizona's rare warm water streams, and has the greatest spring-water discharge in the Mogollon Rim region. The water contains high concentrations of calcium carbonate and dissolved carbon dioxide, resulting in travertine precipitating on rocks, leaves, and other objects in the channel. The encrustations resemble fossils, accounting for the creek's name. Travertine also forms dams that can quickly build to many feet in height; deposition of travertine at a rate of almost one foot per month was recorded at Fossil Creek in 1996 when the Irving Power Plant was shut down for maintenance.

### Restoring Full Flow

Work to return full flows to Fossil Creek began in the late 1990s when several conservation organizations and the Yavapai Nation intervened in the relicensing of the Childs-Irving facilities. The conservation organizations and APS recognized the unique opportunity to restore the Fossil Creek ecosystem to its original condition and APS decided the benefits of restoration outweighed the benefits of continued production from the plants. The resulting settlement agreement included the surrender of license, removal of the majority of the project facilities by the end of 2009, and the restoration of full flow.

### Protecting the Natives

Fossil Creek is one of the few streams in Arizona retaining viable populations of six native fish species: headwater and roundtail chub, desert and Sonora sucker, and longfin and speckled dace. In the mid-1990s the Bureau of Reclamation entered into consultation with the U.S. Fish and Wildlife Service (FWS) about the effects of operating the Central Arizona Project on threatened and endangered fish. The ensuing agreement required construction of a fish barrier in Fossil Creek to prevent non-native fish from migrating up from the Verde River.



The barrier was constructed in 2004 approximately five miles upstream from the confluence with the Verde River. Multiple agencies also collaborated to restore the 12 miles of Fossil Creek above the barrier to a native fishery. Biologists from Reclamation, FWS, Arizona Game and Fish, and the U.S. Forest Service removed native fish from the creek and kept them in holding tanks until after the application of a piscicide to eradicate non-native fish including green sunfish, smallmouth bass, catfish, and yellow bullhead. After the piscicide dissipated, the native fish were returned to the restored creek.

### Pre- and Post-Restoration Research

Northern Arizona University scientists and engineers have been working at

Fossil Creek for the last five years, gathering baseline data about the physical, biological, and social conditions of Fossil Creek prior to the return of full flows. This work will continue to track changes now that full flows have been restored.

Visit [www.watershed.nau.edu/FossilCreekProject](http://www.watershed.nau.edu/FossilCreekProject).  
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### References.....

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