

# ON THE GROUND

## Hualapai Water Quality Standards Program

**Hualapai Dept. of Natural Resources and the U.S. Environmental Protection Agency**

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Recognizing the need to protect and restore the limited waters on its reservation, the Hualapai Tribe of northern Arizona recently enacted a water quality standards program. The program, approved by the U.S. Environmental Protection Agency (EPA) under the Clean Water Act, empowers the tribe to make decisions with federal and state agencies on various actions affecting water quality.

The Hualapai Reservation was established by executive order in 1883; it covers nearly one million acres and 108 miles of the Colorado River in the Grand Canyon, which forms its northern boundary and is the ancestral home of the Hualapai. Approximately 2,000 people live on the reservation, more than 98 percent of whom are tribal members.

### Advantages of Standards

Before applying to the EPA for approval to administer a water quality standards program, the Hualapai Department of Natural Resources had to convince tribal members and eventually the Tribal Council to support the endeavor. This effort involved numerous meetings and public discussions to explain the merits of adopting standards. The emphasis from the beginning was to at least maintain and potentially restore the water quality of 49 springs and eight groundwater sources

on the reservation. These springs are important for cultural reasons as well as for wildlife and livestock uses. Tribal members were eventually convinced that EPA-approved water quality standards would not inhibit water use activities, but would enhance water quality and benefit farming and ranching practices.

Two factors influenced the Hualapai Tribe's decision to develop and adopt water quality standards under the Clean Water Act. First, the tribe recognized

that having standards would give it a basis to affect water pollution control actions both on and off the reservation. Second, the tribe wanted to protect and restore the relatively unpolluted springs that are important in its water-scarce environment. The reservation also has approximately 21 miles of perennial streams and many ephemeral streams.

EPA approved the Hualapai's application to administer the water quality standards program on July 22, 2004 and the tribe's

water quality standards on Sept. 17 the same year. These standards were in place under tribal law for several years before EPA approved them under the Clean Water Act. The tribe received strong support from the Arizona Department of Environmental Quality and U.S. Fish and Wildlife Service in its efforts to develop standards.

The Hualapai Department of Natural Resources is responsible for a variety of environmental programs including water quality, nonpoint pollution sources, wetlands, forestry, wildlife and fisheries management, parks, agriculture, air quality, and environmental services. The number of employees fluctuates seasonally between 30 and 50. Maintaining a consistent level of funding to implement environmental programs is an ongoing challenge. The Hualapai currently receive federal funding from the EPA, Bureau of Indian Affairs, Bureau of Reclamation, Fish and Wildlife Service, National Resource Conservation Service, Department of Agriculture, and Geological Survey. In



Water technician Harry Sahneyah in Spencer Creek.

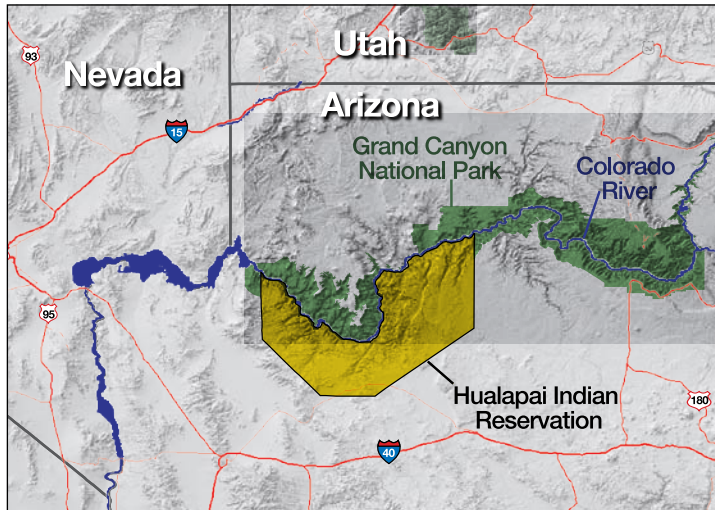


Water technician Alvin Crooke collects a sample from Truxton Wash.

addition, the tribe also provides funding for Water Resource Program efforts.

**Program Yields Results**

Since adopting water quality standards, the Hualapai Tribe has been an equal partner with federal, state, and local authorities in discussing activities that could affect tribal waters. The tribe has already had success in getting off-reservation livestock grazing practices modified to protect tribal waters. Within the reservation, the water quality standards, coupled with supporting tribal ordinances, provide the tribal government with an enforceable means to modify wildlife management and ranching



*The Hualapai Reservation is in northwest Arizona, bounded by the Grand Canyon to the north.*

practices to protect and restore water quality. Some recent modifications include the restoration of riparian wetlands, the addition of fences in grazing areas, and the removal of feral animals from around springs. Even within the relatively

short history of applying standards, the quality of spring waters has improved noticeably in terms of clarity, reduced nutrient growth, and reduced odor.

Hualapai water resources personnel recommend that any tribe considering the water quality standards program:

- recognize the empowerment aspects of adopting and applying water quality standards;
- establish reasonable designated uses;
- ensure that adequate legal support is available within the tribe and EPA;
- have the patience to see the process through; and
- develop a strong relationship with EPA personnel.

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## When the Silvery Minnow Turns to Gold

Joseph J. Fluder III – SWCA Environmental Consultants

The Rio Grande silvery minnow (*Hybognathus amarus*) was listed as an endangered species by the state of New Mexico in 1979 and by the federal government in 1994. Led by the U.S. Fish and Wildlife Service (FWS), numerous federal and state agencies and SWCA Environmental Consultants have contributed to the development and success of silvery minnow rescue and salvage efforts, which have been ongoing since 1998.

These efforts were facilitated by the Biological Opinion updated by FWS in March 2003, which determined that certain actions are necessary and appropriate to minimize the impacts of incidental take (mortality) of the silvery minnow.

Today, the silvery minnow is absent from much of its historical range and is restricted to a reach of river from Angostura Diversion Dam north of Albuquerque downstream to Elephant Butte Reservoir, much of which is susceptible to intermittent flow. The area designated as critical habitat for the silvery minnow extends from Cochiti Dam to Elephant Butte Reservoir, a distance of 150 river miles.

Silvery minnow mortality can occur when the channel dries from drought conditions and intermittent river flow or changes in water operations. The reach between Isleta Diversion Dam and Elephant Butte Reservoir is an area of particular concern, requiring intercession during intermittent conditions to counter potentially substantial silvery minnow mortality. Efforts to rescue and salvage silvery minnows from intermittent sections or



Rescue crew adds oxygen to a bag containing silvery minnow.

isolated areas of the river have reduced the probability of silvery minnow mortality associated with water operations that

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The crew seines an isolated pool for silvery minnow.

would exceed the limit for incidental take, but it is not known whether the rescue program has stabilized the population. Preliminary population data for 2005 indicate a precipitous increase in the number of silvery minnow, although this is most likely a response to hydrology and weather conditions rather than rescue and salvage efforts. Approximately 120 rescue operations were performed in 2005, but this year, because of wet weather and sufficient river flow, crews have only been out approximately 30 times.

#### River Eyes Watch

A cooperative, interagency monitoring team dubbed "River Eyes," which includes representatives from the New Mexico Interstate Stream Commission and the Bureau of Reclamation, travels the Middle Rio Grande during periods of drought or low streamflow looking for reaches or areas of intermittency during early morning hours. Their reports, as well as USGS stream gauge data and weather conditions, are communicated to FWS leaders who dispatch salvage crews to reaches of the river that may have or are likely to experience intermittency. All-terrain and amphibious vehicles are used to travel efficiently on the riverbed between isolated pools and to transport silvery minnow. The FWS-led crews work on an as-needed basis during periods of intermittency, and are available seven days a week, typically beginning their workdays around five o'clock in the morning.


#### Making the Move

Silvery minnow are collected from isolated pools using seines of varying sizes. Trained field personnel sort the fish, with silvery minnow being placed in five-gallon buckets filled with water. The minnows are later transferred to plastic bags or transport tanks on a hauling vehicle. The plastic bags may be placed in an ice chest for protection after river water, salt (18.9 grams/gallon), and oxygen (less than 6.0 milligrams per liter) are added. Fish densities should not exceed 10 grams of fish per liter of water, equal to around 50 to 75 silvery minnows, depending on whether they are small, such as after a successful spawning season, or large and more mature. During periods of collection, FWS crew leaders also identify silvery minnow that are incidental take resulting from the low water levels. Very few mortalities are associated with the rescue efforts.

The transportation of silvery minnow from collection sites to perennial reaches of the Rio Grande occurs when it is most feasible to transport the fish without causing undue stress to them. Release locations and specific access routes to the river are identified before leaving the collection locations. Upon relocation, the plastic bags containing the transported silvery minnow are placed in the river until water temperatures equalize to help the fish acclimatize before they are released.

Michael D. Hatch of U.S. Fish and Wildlife contributed to this article. Contact Joseph Fluder at [jfluder@swca.com](mailto:jfluder@swca.com).

**Reference.....**  
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## Isotope Analysis

D/H	<sup>13</sup> C/ <sup>12</sup> C	<sup>15</sup> N/ <sup>14</sup> N	<sup>18</sup> O/ <sup>16</sup> O	<sup>34</sup> S/ <sup>32</sup> S
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**<sup>13</sup>C/<sup>12</sup>C of Chlorinated Solvents in Groundwater and Soils**

<sup>15</sup>N/<sup>14</sup>N of NO<sub>3</sub>, NH<sub>3</sub>; D/H + <sup>18</sup>O/<sup>16</sup>O in Groundwater

D/H, <sup>13</sup>C/<sup>12</sup>C, <sup>14</sup>C of Crude, Petroleum Fuels & Gases

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