Lake Ahquabi

A Restoration Success Story

Ahquabi: An Impressive Pedigree

Lake Ahquabi borrows its name from Iowa's original residents and it's inspiration from one of the nation's greatest conservationists.

The name Ahquabi comes from the Sauk and Fox tribe and literally means "resting place." Perhaps it was the tranquility of the landscape that inspired Pulitzer Prize winning cartoonist and noted conservationist J.N. "Ding" Darling to recommend the site of Lake Ahquabi as a park site.

This 125-acre lake located in a 770-acre park setting was built in 1935 by the Civilian Conservation Corps and has been a treasured place of quiet beauty since. Located in Warren County south of Indianola, Lake Ahquabi now has more than 200,000 visitor days per year.

Ding Darling's interest in the environment was often showcased through his cartoon skills as shown here.

But like so many of our lakes constructed during the 1930s, the unforeseen impact of agriculture and development was not anticipated. While significant effort has been made to design and construct the lake, there was little consideration made to long-term maintenance. By the 1980s, water quality had suffered and the lake itself was in danger of eventually disappearing. The 125-acre lake had been reduced to 114 acres by sedimentation alone. Excessive nutrients from the 3,321 acre watershed also resulted in murky water and the proliferation of less desirable fish species.

Lake Ahquabi, however, is a success story. It's a story about how a concentrated effort to improve a watershed combined with restoration of a lake can produce dramatic and lasting results. For Lake Ahquabi visitors that means cleaner water for swimming and fishing.

Lake Ahquabi's original beach house

Measuring Success

The results of restoration work at Lake Ahquabi can be measured in terms of tons of soil from sediment delivery and micrograms per liter of various nutrients.

Success, however, is most effectively measured in terms of people. Improving the water quality, fish population and park amenities has resulted in Lake Ahquabi being re-established as a popular recreational destination.

Lake Ahquabi is a classic example of customers recognizing quality; when water quality and fishing was poor, attendance dropped off. Improvements to water quality and angling opportunity have resulted in noticeable increases in the number of people using the lake.

Prior to restoration of the lake, park use was estimated at approximately 60,000 visitor days per year. By 1999, park use had increased three-fold to 206,000 visitor days per year. Over the years, aquatic life in the lake had deteriorated to carp, gizzard shad and slow growing panfish. Since improvements, the fish community has been made much more attractive to anglers. As a result, fishing has has also increased over three-fold to more than 17,000 trips annually. Anglers haven't been disappointed with a catch rate of 2.7 fish per hour, more than double that of most other Iowa lakes.

Prior to improvements, Lake Ahquabi suffered from excess sediments from run-off and aquatic plants.

While the overall cost of the restoration project at Lake Ahquabi was just under $4 million, it is estimated that the "payback" in terms of recreational benefits took only two years. This is based on established studies showing that the average visitor to a state park spends $20 a day and park usage has increased by nearly 150,000 visitors a year since the work was completed.

Improvements made to Lake Ahquabi have resulted in the lake regaining its popularity for recreation in central Iowa.

Lake Ahquabi Fixing a

History can deal some harsh lessons
Through the years, it became evident
Lakes must also be maint

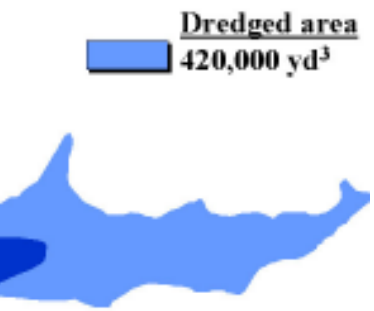
Best management practices on cropland such as no-till (above) along with the installation of sedimentation basins and wetlands (right) in the watershed has reduced sediment and nutrients reaching the lake by 50 percent.

Extensive in-lake renovation wa (above left), installing fish habi above shows the wa

Lake Ahquabi is a shining example of ho through effective watershed planning. Th made in and around the lake to imp

Lake Inside and Out

as was the case at Lake Ahquabi.
t that building lakes isn't enough.
tained and protected.



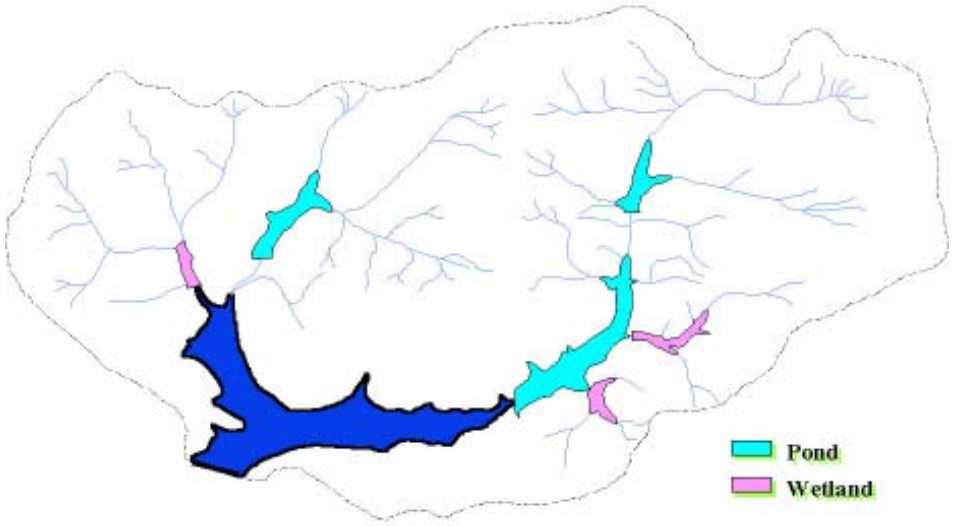
Major infrastrucutre work was done both at the dam (above) and with park amenities such as the enclosed, handicap accessible fishing pier (left).

as done including dredging
itat (above right). The map
ork completed.

ow a lake can be restored, and protected
hese are just a few of the improvements
prove and maintain water quality.

Lake Ahquabi:

A Reflection of its Watershed



The restoration of Lake Ahquabi represents a decade of work by a number of governmental agencies and, more importantly, people within the watershed.

The reduction of lake sedimentation and removal of fine sediments from the shallow reaches of the lake was recognized from the onset as being the first and most important component to improving water quality. Any effort to restore Lake Ahquabi without making improvements to the watershed would have been a short-term solution at best.

From the very beginning, the public was openly invited to participate in the restoration effort at Lake Ahquabi. Public meetings were held to seek the input of the lake's neighbors to determine the most effective methods to restore and protect water quality.

Through public participation, it was determined that soil and nutrient delivery to the lake could be reduced through best management practices on pasture and cropland in the watershed and through the renovation of two existing sediment basins and development of five new wetlands above the lake. Overall, 95 percent of the cropland in the watershed is now farmed under Natural Resource and Conservation Service (NRCS) approved soil conservation practices.

Although monitoring activity will continue through 2002, it has already been estimated that sediment delivery to the lake has been reduced by at least 50 percent and additional efforts are underway to further reduce sediment and nutrient delivery to the lake.

Partners

- Iowa Deptartment of Natural Resources
- U.S. EPA - Clean Lakes and 319 programs
- Warren County Conservation Board
- REAP
- Marine Fuel Tax
- Iowa Deptartment of Agriculture and Land Stewardship
- Institutional Road Funds (DOT)
- Landowners
- Lions Club, Izaak Walton League
- Warren County Soil and Water Conservation District
- U.S. Fish and Wildlife Service - Sport Fish Restoration Fund

A Recipe for Restoration

Once steps were underway to protect the watershed, the massive effort of restoring the actual lake could begin at Ahquabi.

A new lake draw-down structure and valve was installed in the dam. The new structure will allow intensive management of the lake by allowing greater ability to control water level. Construction and repair of the spillway included a 10-foot vertical drop to reduce the likelihood of undesirable fish entering the lake from waters below the dam. A massive fish habitat improvement effort in the lake basin included the addition of structures such as rock reefs, brush piles and stake beds.

Construction of a two-lane boat ramp and a fishing jetty along with expansion of the parking lot and renovation of eight existing fishing jetties was accomplished in 1994-95. A 20-by-40-foot enclosed handicap accessible fishing pier was also added during this time.

Extensive stocking of largemouth bass, bluegill, sunfish, redear sunfish, channel catfish and crappie was accomplished in 1995.

Improved land practices and dredging (top two photos) improved both water quality and fishing. Fish in Ahquabi had become stunted (above), but the improvements have resulted in better quality fishing for anglers (right).

Lake aeration was installed in the deepest part of the lake in 1994 to reduce the likelihood of future water quality problems and assist in the fish management program. Approximately 6,000 tons of rock was placed on 1,000 feet of shoreline to protect it against erosion.

Hydraulic dredging was used to remove 422,339 cubic yards of sediment from the shallow, upper reaches of the east and south arms of the lake in 1996-97. The material was pumped into three sediment basins constructed in the watershed above the lake. These basins will be operated as wetlands and used to reduce future delivery of nutrients and sediments.

The results from the effort at Ahquabi have been astounding. Today, the lake is home to a vibrant, thriving fish community. Unacceptable species of fish such as common carp and gizzard shad were reduced from over 700 pounds per acre to zero.

Water clarity has been increased from under 20 inches to over four feet. Water quality monitoring indicates that nutrients such as nitrates and phosphates have been significantly reduced through the efforts to reduce erosion in the watershed.

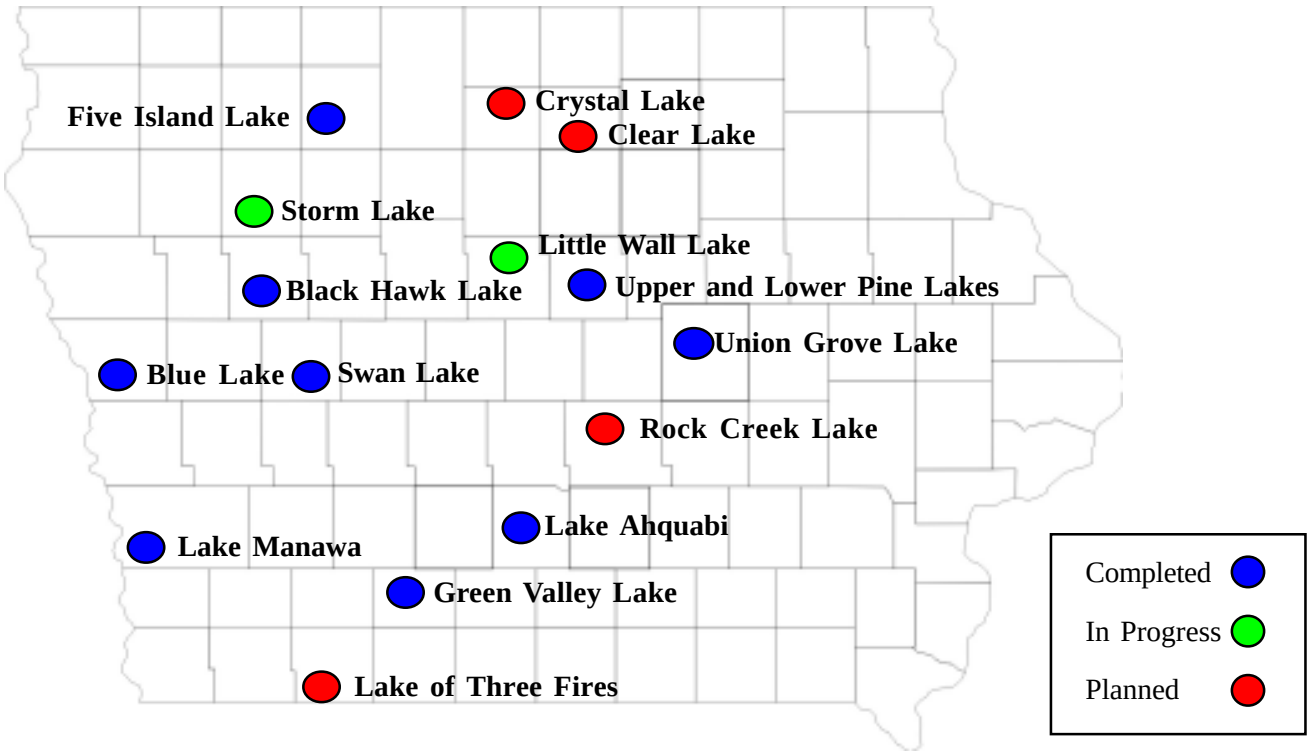
Using What We've Learned

Nine lake/watershed restoration projects have been accomplished within the past two decades.

Each of these have strived to improve water quality and recreational use of the lake. From these projects we have learned:

- The public is very supportive of efforts to maintain and improve the quality of our lakes.
- Land owners in the watershed of Iowa lakes have been active partners in our efforts to improve lake water quality.
- Restoration of carefully selected lakes and lake watersheds can be very cost effective.
- Selection of lakes and lake watersheds for restoration should be based on public benefit and cost effectiveness of restoration.
- Not all lakes can be restored in a cost effective manner.

Iowa currently has 65 lakes listed on its "impaired waters" list and most of those are impacted by siltation and excess nutrients. Much of what has been learned through projects like Lake Ahquabi will be useful in improving water quality at those lakes as well.



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