Success in the Chalk Creek Watershed:
Reduced Phosphorus, Enhanced Habitat

The Chalk Creek watershed in Summit County, Utah, encompasses 173,000 acres. Roughly 123,500 acres is rangeland, 2,000 acres is used as cropland, and 44,000 acres is forested. The watershed is 100 percent privately owned. Chalk Creek is a major tributary and source of sediment and nutrients to the Weber River, which supplies drinking water to Ogden, Utah, and other Wasatch Front communities.

Because Chalk Creek is an important water source and a recreational fishery, an intensive water quality assessment was conducted in 1990 to identify sediment and nutrient sources in the Chalk Creek watershed. The results of the watershed assessment indicated that the creek was impaired because of habitat alteration and sediment. The total phosphorus level was also above the Utah State Division of Water Quality Standards' indicator value for the beneficial use designation of a cold-water fishery. Utah officially placed the stream on its 303(d) list of impaired waters. EPA approved the Total Maximum Daily Load (TMDL) plan in 1997. Between 1991 and 1999, $1,673,000 in section 319 funding was allocated to the watershed effort.

High local support for restoring watershed

In 1991 the local soil conservation district, landowners, water users, and resource managers initiated the Chalk Creek Nonpoint Source Water Quality Project to address the water quality impairment of Chalk Creek. By 1994 a coordinated watershed resource plan had been developed and a technical advisory committee, composed of local, state, and federal agencies, private individuals, and groups, had been formed to assist the local steering committee.

The primary goal of the Chalk Creek Nonpoint Source Water Quality Project was to reduce erosion and sedimentation entering the creek. Methods identified to reduce erosion in Chalk Creek were stabilization of streambanks, restoration of riparian vegetation, and improved rangeland vegetation to reduce overland runoff.

There was a high level of landowner support in the Chalk Creek watershed. By 1997 many of the 100 major watershed landowners, working with the Natural Resources Conservation Service and other agencies, had begun designing resource management system plans and restoration projects. A typical Chalk Creek restoration project consists of fencing off the riparian zone on one or both sides of the creek, followed by implementing a rotational grazing management plan. Some projects address eroding banks by installing stream barbs or meanders in stream reaches that were historically straightened. Most restoration projects on Chalk Creek include planting willows at degraded sites. The most successful projects have natural willow regeneration on newly created floodplain deposition zones. The table summarizes the BMPs that have been implemented in various projects in the Chalk Creek watershed.

The payoff: reduced phosphorus in watershed

The landowners' cooperation and implementation of restoration projects have reduced the concentrations of total phosphorus in Chalk Creek. Results from water quality monitoring indicate that total phosphorus concentrations in Chalk Creek are lower for the time period of 1990 to 1999 than for the time period of 1978 to 1989 (see figure).

Chalk Creek

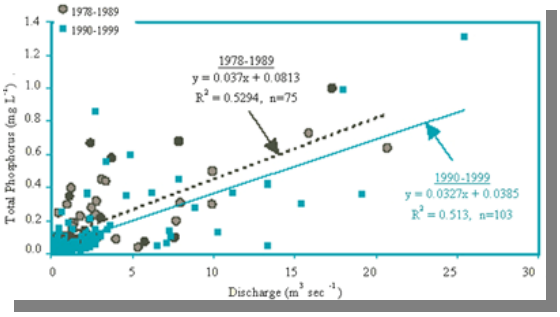
It is expected that total phosphorus concentrations will further decrease as more restoration projects are completed and landowner resource management systems are implemented.

Implementing best management practices (BMPs) throughout the watershed has enhanced the aquatic community, with emphasis on the fishery populations. Reduced sediment from eroding banks and riparian areas has improved fish spawning and macroinvertebrate habitat. Placing willow plantings and adding in-stream log and rock features as flow-directing structures have provided fish resting habitat in addition to bank stability. As more BMPs are implemented throughout the watershed, the benefits to water quality and the aquatic community will continue to increase. A noteworthy indicator of success is the presence of a population of pure strain Bonneville cutthroat trout in the watershed.

Best Management Practices Implemented in the Chalk Creek Watershed

Best Management Practices	Amount Completed
Brush management	1,479 acres
Riparian fencing	13,128 feet
Rangeland fencing	8,842 feet
Stock watering	3 units
Streambank protection	3,801 feet
Streambank vegetation	3,652 feet
Stream channel stablization	8,655 feet
Prescribed grazing	15,443 acres
Sprinkler irrigation systems	1,118 acres

Total Phosphorus Concentrations in Chalk Creek (at Highway 189 in Coalville)



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Primary Sources of Pollution:
- agriculture

Primary NPS Pollutants:
- sediments & nutrients

Project Activities:
- fencing
- prescribed grazing
- revegetation
- stream channel stabilization
- Sprinkler irrigation systems

Results:
- reduced concentrations of total phosphorus
- enhanced aquatic community