Seco Creek Water Quality Demonstration Project—Range Improvement Through Cooperation

Joe Franklin and Phillip N. Wright

Seco Creek is one of many important creeks and rivers in south central Texas that provides valuable water recharge to the Edwards Aquifer. The Edwards Aquifer is the sole water source more than 1.5 million Texans and 103,000 acres of irrigated cropland. Ensuring the quality and quantity of water within the Edwards Aquifer is very important for the entire eight-county region that depends on the water source. Seco Creek originates in southwestern Bandera County and flows southward into Medina County where it crosses the Edwards Aquifer recharge zone. At the recharge zone, the stream becomes ephemeral since most base flow enters the aquifer. South of the recharge zone the flow is intermittent to nonexistent depending on rainfall.

The Seco Creek Water Quality Demonstration Project was initiated in April 1990, through a joint effort of the USDA-Soil Conservation Service (SCS), Texas Agricultural Extension Service (TAES), USDA-Agricultural Stabilization and Conservation Service (ASCS) and Texas State Soil and Water Conservation Board (TSSWCB).

Authors are respectively USDA-SCS, Area Resource Conservationist 1022 Garner Field Road, Uvalde, Texas 78801; and USDA-SCS, Seco Creek Project Manager, 1616 Ave. M, Suite 100, Hondo, Texas 78861.

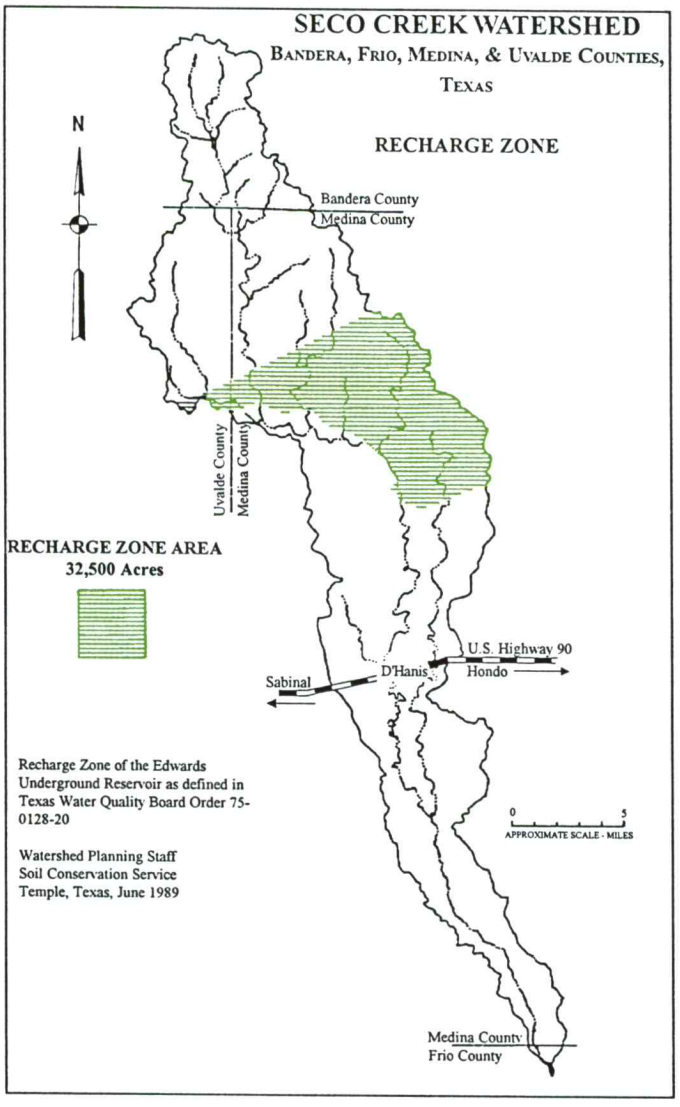
Phillip Wright, Project Manager for SCS, and Wesley Newman, Project Manager for TAES, coordinate the efforts of 26 local, state and federal agencies involved in the project.

This project is part of the national USDA Water Quality Initiative. The project is distinct from other national projects because the primary focus is on rangeland. About 88 percent of the project area is rangeland, 10 percent is cropland and 2 percent is pastureland. It covers 267 square miles in the Edwards Plateau and Rio Grande Plains Major Land Resource Areas. It is located 50 miles west of San Antonio. The project area consists of the Seco Creek watershed that lies in portions of Bandera, Medina, Uvalde and Frio counties.

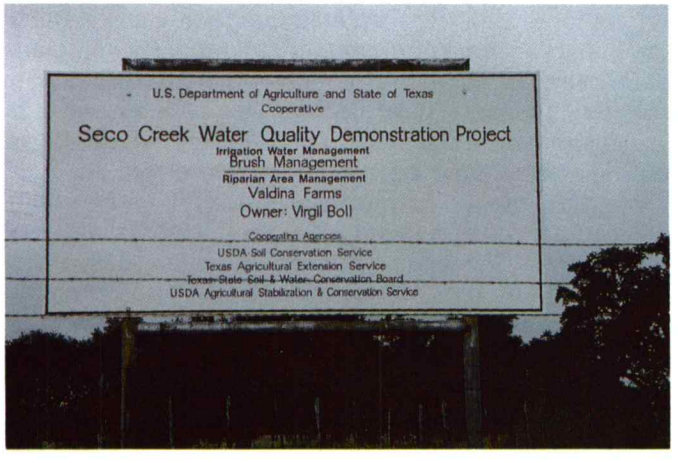
The primary goal of the Seco Creek Project is to demonstrate and transfer technology to local landowners and operators. This new knowledge will lead to a voluntary increase in practices that maintain or improve water quality and result in water augmentation.

The project calls for application of best management practices on the various land uses within the 171,000 acre privately owned watershed. Landowners are applying conservation practices through the Great Plains Conser-

Seco Creek flows above ground until it reaches the recharge zone of the Edwards Aquifer.



vation Program and the Annual Conservation Program, however, many landowners receive only technical assistance.



Cooperating landowners are provided with a sign depicting the best management practices they are applying on their land.

Brush management results in water augmentation and increased forage production for livestock and wildlife.

Numerous practices are being utilized by landowners within the project area. Prescribed burning and mechanical brush management have been completed on 4,500 and 6,000 acres, respectively, resulting in improvement of range condition, higher forage quality and increased water infiltration. Alternative methods of chemical brush management on species such as mesquite, twisted acacia and persimmon have been completed on more than 2,000 acres, reducing the threat of water quality degradation. Range seeding and pasture planting have been completed on 4,000 acres. These practices increase infiltration, improve forage quality and decrease soil erosion. Cross fencing, livestock water pipelines and watering facilities have helped landowners achieve better livestock grazing distribution and improved wildlife habitat. Sediment and water control structures and vegetative filter

Virgil Boll, landowner, and James Alderson, Plant Materials Specialist, evaluate a range seeding mix of big bluestem, 'Alamo' switchgrass, 'Lometa' Indiangrass, wilman lovegrass, 'Selection 75' kleingrass, , 'Haskell' sideoats grama, 'Sabine' Illinois bundleflower and western indigo.

Prescribed burning is an economic and effective tool used to manage ashe juniper and improve forage quality.

strips in and around riparian areas have reduced erosion and increased recharge potential. Management practices such as proper grazing, grazing systems and pasture management have been applied to more than 65% of the watershed.

Demonstration and monitoring sites have been established within the watershed to evaluate best management practices. Nine small watersheds are monitored to evaluate two broadcast chemical applications for water quality and quantity. Two additional small watersheds are being monitored to determine water use by ashe juniper, one of the major non-economic water using species in this area. Five spring enhancement sites are being monitored for spring flow following ashe juniper management. One site is yielding a 25% increase in spring flow when compared to pre-treatment baseline data.

A cooperative agreement with United States Geological Survey (USGS) has allowed for establishing six gauging stations within the watershed where water quality parameters are constantly monitored through a complete chemical scan according to Environmental Protection Agency standards. The project will also evaluate and utilize data from the watershed in computer models designed to predict water yield and non-point source pollution.

Tom Fillinger, Soil Conservation Technician for the Seco Creek Demonstration Project, monitors spring flow behind a V-notch weir before and after brush management.

Vegetative filter strips are planted in riparian areas to reduce the effect of sedimentation from cropland on water quality.

Interest in the project has been outstanding. More than 50% of the landowners within the watershed are involved in the project, applying practices to more than 60% of the land area. More than 150 tours, field days and presentations have reached more than 11,000 people. Efforts of the Seco Creek Demonstration Project and application of the best management practices will have significant effects on the water quality and quantity in this area of Texas. The project has also demonstrated that landowners will voluntarily apply practices to maintain or improve water quality and quantity.