Streambank Modification Successful in Utah

Improving water quality by reducing pollutants--metals, sediments, and nutrients--was the goal when Murray City began a demonstration project in March 1990 to restore the Jordan River streambanks.

The aim of the streambank demonstration project was to install streambank modification best management practices to improve the slope, install riprap to protect against seasonal high flow, revegetate the slopes with native species (including grasses, shrubs, and trees), and construct two wetland pond systems to treat urban runoff before discharging to the Jordan River.

The project began with regrading the bank to a 3 to 1 slope. Then workers planted nearby cottonwood saplings, - followed by grasses, shrubs, and other trees. A second wetland pond system was completed to complement the first system.

Excavated material from grading was used to construct trailside berms throughout the city, and broken concrete from steepened banks was buried or hauled to landfill sites. Large angular boulders from a local quarry were used on the finished bank slope and filled in with smaller material. Riprap was not used continuously along the segment. Vegetation such as willows or other native species were planted in open slope areas.

Cottonwoods were transplanted early, followed by birch, box elder, willow, dogwood, sumac, wood rose, currant, and other donated species. Larger species were grouped on upper slopes, and shrubs and willows were grouped on - middle and lower banks. Much of the planting was done during Earth Day activities sponsored by Murray City by over 1,000 community volunteers. Later in the season, several of the dominant species took over, such as clover, wheat grass, alkali sacaton, Great Basin wild rye, and reed canary grass. Wildflower carpets of 1,000 square feet, providing 15 species of draught tolerant wildflowers, were grown in an artificial root-holding mat similar to regular grass sod.

The BMP successes are easy to see. The grading and installation of riprap facilitated the irrigation of the native and ornamental plant species that now flourish on both east and west river segments. Stormwater additions to the oxbow and constructed wetland ponds are beginning to net large growths of water dependant plants--Typhales, Scriptus, Carex, Juncus, and Phragmites. The wetland complexes are growing rapidly and will increase water quality management performance. Most understory and overstory plant species have survived and are reproducing.

Salt Lake County data, collected in 1990 and 1991 at the demonstration project site, showed some water quality improvement. Results of sampling at upstream and downstream stations showed decreasing concentration of - arsenic, zinc, total suspended sediment, dissolved oxygen, nitrate, and phosphorus, except during runoff periods. During high flows from storm activity, concentrations were greater at the downstream site, probably because of the stormwater discharge located between the two sites. In September 1992, the project was the site of the first "Celebration of Clean Water" sponsored by the Utah Department of Environmental Quality, Department of Natural Resources, and other local agencies.