

## Little Medicine Bow River Channel Reconstruction

**Client:** Wyoming Department of Environmental Quality  
Abandoned Mine Lands Division  
122 W. 25<sup>th</sup> Street, Herschler Building  
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**ANDERSON CONSULTING ENGINEERS, INC.**  
*Civil • Water Resources • Environmental*



**Little Medicine Bow River before Construction**

The staff of Anderson Consulting Engineers, Inc. (ACE), while previously associated with Lidstone & Anderson, Inc., served as a subconsultant to AVI Engineers of Cheyenne, Wyoming to perform the hydrologic and hydraulic design for the Shirley Basin Mine Land Reclamation Project, Wyoming AML 13. This project was the largest single AML construction project in Wyoming with estimated construction costs of \$75 million dollars.

Responsibilities included the evaluation of 1.5 miles of unstable channel diversion and the design of over 3.5 miles of reclaimed channel and floodplain for the Little Medicine Bow River and

its associated tributaries in central Wyoming. The Little Medicine Bow is a perennial river with a contributing watershed in excess of 180 square miles. Portions of the reclamation design project included reclamation of the channel over an abandoned uranium mine pit, design of a backfill sequence, reconstruction of wetlands and stable channel design. The river and its associated wetlands were designed and permitted under the U.S. Army Corps of Engineers 404 program.

The design approach incorporated a qualitative geomorphic evaluation of the river and its watershed, HEC-1 computer modeling to determine basin hydrology, HEC-2 computer modeling to establish channel hydraulics and sediment continuity and equilibrium slope analysis to determine sediment transport capabilities of the designed stream. Stabilization strategies included bio-engineered solutions to stream bank erosion. ACE was also responsible for the hydraulic design of a compound channel/floodplain for the reconstructed Little Medicine Bow River. Hydraulic drop structures were designed to ensure long-term horizontal and vertical control of the reclaimed channel.



**Little Medicine Bow River after Construction**

Final plans and specifications were prepared. The first phase of the \$10 million channel construction phase began in the Fall of 1988.