

## Rio Salado River Restoration Project Channel Design, Sediment Transport, and Scour Analysis

WEST Consultants, Inc., (WEST) was contracted to design a low flow channel for the Rio Salado river restoration project located along the Salt River in Phoenix, Arizona. The project extends along a five and one-half mile reach of the river from Interstate 10 downstream to 19th Avenue.



*Natural low flow channel and vegetation in the Salt River (Rio Salado) near Interstate 10*

A low flow channel was designed to maximize the area available for overbank park, recreation and habitat development, while conveying a design discharge of 12,200 cfs without significant scour or deposition. The low flow channel was also designed to carry all long-term releases from the upstream reservoir lasting over 30 days to prevent the drowning of habitat. The low flow channel also maintains the flood carrying capacity of the Salt River throughout the project reach by balancing the loss of capacity from the introduction of plants and trees within the river, with additional capacity created by channel excavation.

Sediment transport simulations were performed to aid in the low-flow channel design. The results were used to evaluate grade control locations; estimate impacts for the 25-, 50- and

100-year peak flows; and to identify annual maintenance requirements. Guide dikes were included in the design to maintain the alignment of the low flow channel, protect the main flood control channel banks, and minimize the formation of secondary channels in the overbank areas.

Five highway bridges and two sand and gravel mining operation conveyor bridges cross the Salt River within the project reach. The stability of these bridges was evaluated for both existing and project conditions. Two of the highway bridges were identified as being scour vulnerable under project conditions. The proposed countermeasure at each bridge is a roller compacted concrete apron within the low flow channel.

**Project Owner:**

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**Completion Date:**

*May 2000*

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*WEST Consultants, Inc. were not only **timely** with their product submittals (during a complex iterative coordination process), but provided **innovative** hydraulic design features ... that further **reduced** the initial design cost estimates.*

Mr. Glenn Mashburn  
Hydraulic Engineer – Group Leader  
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