

PROJECT PROFILE

SPILLWAY REHABILITATION AND DAM IMPROVEMENTS

Quemahoning Dam in Somerset County, Pennsylvania is approximately 1,000 feet long and 100 feet high and was built in the early 1910s by the hydraulic fill method. The impounded reservoir has been the primary source of water for the Johnstown steel industry since the dam was constructed.

Quemahoning Dam is served by both a primary spillway (used to regulate flow to the water supply pipeline and to lower the reservoir pool for repair work and emergencies) and an emergency spillway that discharges excess runoff. The emergency spillway includes a 400-foot-long, L-shaped entrance ogee that converges to an 85-foot-wide, 600-foot-long, concrete-lined open channel. The spillway channel consists of multiple ogee weirs and four "steps" where the spillway floor drops vertically.

A flood event in January 1996 resulted in major damage to the emergency spillway. Floor slabs located at the downstream end of the spillway were displaced by the flood. D'Appolonia designed replacement slabs to be more resistant to displacement and more durable. This was achieved by utilizing slabs of increased mass and rigidity, and by anchoring the slabs to underlying bedrock and doweling them to the massive lateral spillway walls.



Raised crest and new armored spillway channel embankment at Quemahoning Dam.

In areas where the floor slabs were relatively thin, the existing concrete was removed and replaced with bedrock-anchored, cast-in-place concrete. The thicker concrete floor slabs, the walls and one weir were repaired by chipping out weathered concrete and replacing it with concrete overlays that were anchored to underlying sound concrete. The weir repair and some of the wall repairs were made using steel mesh-reinforced shotcrete. The spillway repair work was completed in 1997.

In addition to spillway rehabilitation, D'Appolonia prepared designs for rais-

ing the spillway crest (to gain additional spillway capacity) and for raising and protecting the channel embankment along the spillway. The work scope also



Anchor installation at spillway step.

included raising a township road adjacent to one abutment of the dam so that it would remain above maximum pool level. These improvements were constructed in 2002. D'Appolonia provided construction monitoring services for all of the rehabilitation work performed at the dam.



Rehabilitation work in progress on the Quemahoning Dam emergency spillway.