

LOWER ORANGE RESERVOIR SPILLWAY RECONSTRUCTION

CITY OF BARRE, VERMONT



Lower Orange Reservoir Spillway Before the May 2011 Storm



Damaged Lower Orange Reservoir spillway

The Lower Orange Reservoir is the sole drinking water source of supply for the City of Barre. Heavy rains on May 26, 2011, a storm event with a 100 year recurrence interval, resulted in major stormwater runoff. Flows out of the reservoir exceeded the capacity of the emergency spillway and the east wall of the spillway failed.

DG completed preliminary engineering, topographic survey and a Basis of Design report. Design and construction services were provided for emergency and permanent repair work, as well as assistance with FEMA funding. A significant component of the engineering evaluation was a Hydraulic and Hydrology (H&H) study to model the existing spillway and proposed spillway modifications. The H&H study results were used to size a new spillway channel with capacity to pass the 100 year flood.

The project design for repair of the damaged channel and spillway and construction of a secondary spillway channel includes steel sheeting for 250 ft along the eastern wall of the existing spillway, to ensure protection of the structure during events over 2,600 cfs. The existing channel floor was reconstructed and the original Ogee spillway was preserved.

KEY FEATURES:

- 75% funding from FEMA for \$80,000 in winter protection measures for emergency repairs completed in early December 2011.
- Permanent repairs to the spillway and construction of a new spillway with a total project cost of \$1,600,000 and are funded under the FEMA hazard mitigation program.
- Hydraulic modeling including spatially varied flow simulations.
- Hydrology calculations were performed for multiple storm events including the 500 year storm.