On May 15, a team of hydrographers from the U. S. Geological Survey Water Science Center, Northborough, Massachusetts, measured a flow of 95,000 cubic feet per second just before the flood crest. The flow was measured by an Acoustic Doppler Current Profiler (ADCP), which uses ultrasonic energy to measure river depth, width, and velocity to calculate the total discharge in cubic feet per second. The ADCP (see photos below) is attached to a tether and towed across the river from a bridge. Typically a complete flood-discharge measurement can be made by two hydrographers using an ADCP in about 15 to 30 minutes. Before the ADCP was developed, a measurement of the flow made on May 15 would have required two hydrographers to work for 2 to 3 hours lowering and lifting a 100-lb weight and velocity meter to measure depth and velocity at about 25 locations across the river.

Acoustic Doppler Current Profiler being used to measure the discharge of the Merrimack River below Concord River at Lowell, Massachusetts, 01100000, May 15, 2006.
(USGS photo)