



United States Department of the Interior
U.S. GEOLOGICAL SURVEY
Reston, Virginia 20192

In Reply Refer To:
Mail Stop 415

February 17, 2017

Memorandum

OFFICE OF SURFACE WATER TECHNICAL MEMORANDUM 2017.02

SUBJECT: Mandatory use of QRev for processing moving-boat streamflow measurements made with acoustic Doppler current profilers and stored in the National Water Information System

The purpose of this memorandum is to make the use of QRev software (Mueller 2016) mandatory beginning March 31, 2017, for processing streamflow measurements made using an acoustic Doppler current profiler (ADCP) from a moving-boat and stored in the National Water Information System. Measurements made and processed prior to March 31, 2017 are not required to be reprocessed using QRev. U.S. Geological Survey (USGS), Office of Surface Water (OSW) developed QRev to improve the consistency and efficiency of processing ADCP streamflow measurements in the field ([OSW Technical Memorandum 2012.01](#)) and office. QRev was released and recommended for use in March 2016 ([OSW Technical Memorandum 2016.03](#)) and has been used successfully by many USGS hydrographers. User feedback has indicated that QRev has improved the processing of measurements by providing:

1. automated data quality checks with feedback to the user;
2. automated data filtering;
3. automated application of extrapolation, LC, and SMBA algorithms;
4. consistent processing algorithms, independent of the ADCP used to collect the data;
5. improved handling of invalid data;
6. a consistent procedure for ADCP data review; and
7. an estimated uncertainty to help guide the user in rating the measurement.

For those that have not used QRev or would like additional training or have questions on the use of QRev, the QRev webpage (<https://hydroacoustics.usgs.gov/movingboat/QRev.shtml>) has links to recorded webinars providing training on QRev. In addition, QRev has been integrated into all ADCP training classes (for a list of available classes see <https://hydroacoustics.usgs.gov/training/index.shtml>).

QRev software and the associated documentation on the use and installation of QRev are available through the hydroacoustics webpage for [QRev](#). Local system administrators should be able to push the installation and upgrade of QRev through the use of system management software, such as, System Center Configuration Manager ([SCCM](#)) available for their use.

The discharge computed by QRev is loaded into NWIS by importing an XML file created by QRev into SV Mobile version 1.0.10 or later and then importing the resulting XML file from SV Mobile into NWIS. The SV Mobile stylesheet has been updated to incorporate some of the features of QRev and other fields to better serve information from newer ADCPs. This stylesheet (version 1.5.1 or later) is automatically available when using the [Field Sheet Viewer](#).

In addition to fixing reported bugs, QRev continues to be improved with new features and improved algorithms. Versions of QRev on the webpage will be classified as minimum required, recommended, and testing. All users should be using the minimum required version or a more recent version (recommended or testing). Users are encouraged to use the recommended version as it will include bug fixes and enhancements since the minimum required. Experienced users are encouraged to use the testing version and provide feedback to QRev developers. Testing versions do not have any known problems but have not been tested with a sufficient variety of data files to be recommended. Multiple versions of QRev can be installed on a computer simultaneously with each version in a separate folder. Currently both 32-bit and 64-bit versions of QRev are available, however, a compiler upgrade is planned for late spring or summer of 2017 and then only 64-bit versions will be available.

QRev is compatible with Teledyne RD Instruments¹ Rio Grande, StreamPro, RiverRay, RiverPro, and RioPro ADCPs with data collected using WinRiver II and SonTek RiverSurveyor M9 and S5 ADCPs with data collected using RiverSurveyor Live and output in Matlab format. If a problem or bug prevents use of QRev, the use of WinRiver II and RiverSurveyor Live for post-processing is allowed but the reason that QRev was not used should be documented with the measurement. If users experience problems with using QRev please post to the [QRev Board](#) on the WMA Technical Support Forum or contact David Mueller (dmueller@usgs.gov) so that the problem can be addressed.

//signed//

Robert R. Mason, Jr.
Chief, Office of Surface Water

Reference

Mueller, D.S., 2016, QRev—Software for computation and quality assurance of acoustic Doppler current profiler moving-boat streamflow measurements—User’s manual for version 2.8: U.S. Geological Survey Open-File Report 2016–1052, 50 p., <http://dx.doi.org/10.3133/ofr20161052>.

Distribution: GS-W All

¹ Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.