

Hydrologic Frequency Analysis Work Group (HFAWG) Report for the July 9, 2012 meeting of the Subcommittee on Hydrology

After the April 19, 2012 meeting of the Subcommittee on Hydrology (SOH), it was agreed that the HFAWG would complete a few action items before requesting approval of our plan to revise Bulletin 17B. Since the April 19 SOH meeting, progress has been made on two of those action items:

- Continue work on improving the confidence interval computations, and
- Continue work on software and related documentation notably the USGS PeakFQ program Version 6.

Tim Cohn, USGS, reported to the Testing Group last week that he has determined the issue with the confidence interval computations. Previously the confidence intervals were based on a first-order linearity assumption that was reasonable for skews between -0.5 and +0.5 and sample sizes greater than 50. However, this linearity assumption was not accurate for larger skews and smaller sample sizes. Tim has developed a more detailed approach for estimating the variances of the flood discharges and is discussing this approach with the Testing Group. The new approach will be programmed into the USGS PeakFQ program Version 6 as reported below.

The USGS has continued work on the graphical-user interface (GUI) of PeakFQ and development of a more robust routine for computation of EMA-based confidence intervals. The previous (March 20, 2012) release of PeakFQ Version 6 included input forms and graphics and output text and plots for use of EMA. However, some of the labeling on the input forms and output text were ambiguous. One ambiguity misled users into thinking that they were applying the base Bulletin 17B (B17B) "systematic record" algorithm when they were instead using EMA without a regional skew. Users were misidentifying the "EMA systematic" estimates as "B17B systematic" estimates and expressing concern that the "B17B estimates were wrong". The headings have been revised to clarify the outputs.

The March 20 release also did not detect or flag in the display window periods of missing record. This omission allowed users to neglect the presence of some short periods of missing record and to unknowingly use inappropriate "perception thresholds" for the missing periods. Use of the inappropriate thresholds resulted in incorrect flood-frequency estimates. The revised program identifies the missing periods, notifies the user with a screen banner, and will not process flood-frequency computations until appropriate thresholds are inputted.

Tim Cohn has developed an algorithm that properly computes the confidence intervals and has implemented that program in "R" and Fortran. The USGS and its contractor, Aqua Terra, will incorporate the new confidence interval into PeakFQ Version 6. USGS expects to release the new version of PeakFQ for testing and review of the HFAWG and SOH by the end of July.

On June 20, 2012, Tim Cohn gave a presentation to the Committee on Environment, Natural Resources and Sustainability Subcommittee on Water Availability and Quality (SWAQ) on “Addressing Climate Change in the Bulletin 17B Update”. This committee is in the Office of Science and Technology in the President’s Office. Tim’s presentation was prompted by earlier discussions with senior EPA and Council on Environmental Quality (CEQ) scientists who were concerned that the HFAWG proposed Bulletin 17B update was not adequately addressing climate change. During Tim’s June 20 presentation, he pointed out that established procedures for adjusting for the effects of climate change were not available and that trend testing on annual peak flows at 1,491 HydroClimatic Data Network (HCDN) stations did not reveal significant trends at many stations. The HCDN stations are those where the annual peak flows are not affected by regulation, diversions and land-use changes. These were the two major reasons why the HFAWG is not planning on describing more detailed procedures for dealing with climate change. The SWAQ seemed to understand Tim’s points but did suggest that the HFAWG needed to explain in more detail why climate change could not and was not being addressed in more detail in the proposed Bulletin 17B update.

The HFAWG plans for updating Bulletin 17B were discussed in some detail at the April 19, 2012 SOH meeting. The current plan is to request SOH approval of the recommended changes in Bulletin 17B at the October 2012 meeting of the SOH. **It is assumed** that all issues related to the recommended changes in Bulletin 17B will be resolved by October or that a majority of HFAWG members will be in favor of the recommended changes.

As the HFAWG continues discussion and resolution of the technical details for updating Bulletin 17B, it is beneficial to look forward and determine how the Bulletin 17C will be published. In 1982 Bulletin 17B was published by the Hydrology Subcommittee of the Interagency Committee on Water Data (comprised of only Federal agencies). The USGS Office of Water Data Coordination (that no longer exists) actually facilitated and coordinated the publication of Bulletin 17B.

It is envisioned that Bulletin 17C will be a publication of the Subcommittee on Hydrology of the Advisory Committee on Water Information (ACWI) with the office of the Executive Secretary of ACWI coordinating the public comment period on Bulletin 17C. Public comments on Bulletin 17C will be obtained through a Federal Register notice with the following three reports being posted on a USGS web site:

- Draft Bulletin 17C document,
- User’s manual for the USGS PeakFQ program Version 6, and
- “Updating Bulletin 17B for the 21st Century”, the testing report describing the evaluation of EMA that will be published as a USGS report.

It is envisioned there will be a 60-day comment period with public comments posted on the USGS web site. The Chair of the HFAWG will be responsible for coordinating responses to the public comments that will be posted on the USGS web site.

It is envisioned that Bulletin 17C will be published by the USGS but it will not be published in the standard series of USGS reports (Circular, Water-Supply Paper, Scientific Investigations Report, etc.). It is envisioned that Bulletin 17C will be a report of the Subcommittee on Hydrology but published by USGS consistent with Bulletin 17B in 1982.

Will Thomas

Michael Baker, Jr.

July 9, 2012