Slope Area Reviewer Check List

Site\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reviewer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Field Survey

* Field survey raw data is available?
* Standard techniques used to complete field survey?
* Instrument calibrations performed before survey and documented? (peg test for levels, total station manufacturers calibration)
* Closure error computed and applied if necessary?
* Field notes complete in regards to field party assignments, instrumentation (serial numbers), field conditions, coordinates of starting point hub, beginning azimuth orientation, etc.?
* High Water Marks listed in field notes along with quality description?
* Were high water marks surveyed on both banks?
* Notes on roughness properties included?
* Evidence present that indicates the HWM were plotted in the field to aid in the selection of the cross section locations?
* Is a good field sketch present? Includes: location of cross sections, hubs, RMs, structures, description of major roughness elements (trees, brush, boulders, etc), gage locations, CSG, main channel, road embankments,and other pertinent objects or points of reference. The plan-view sketch should also contain the approximate location and “view direction” of photographs taken. Cross section sketches should be included that include details vegetation, obstructions, or anything that might impact boundary roughness.
* Are RM’s from the gage included in survey?
* If soundings for cross section taken (ADCP, manual weight, etc), were these properly documented in the package?
* Adequate photo documentation of site?
* Was the potential for debris flows examined in field and dismissed? Do you concur?

Data Reduction and Computations

* Was baseline properly drawn and longitudinal distances established?
* Are the stationing/elevation pairs for each cross sections properly determined? If SACGUI is used, is the “snap too” line located properly for each cross section?
* Is there adequate discussion of determination of n values?
* Is the estimate of n-values at each cross section reasonable?
* Are cross section plots shown?
* Was subdivision done properly and primarily for major breaks in channel geometry?
* If there was any subdivision solely for major changes in roughness, does this subdivision preserve the “complete or nearly complete wetted perimeter” of the geometry as discussed in the criteria outlined in TWRI Book 3 Chapter A15 pp 20-23?
* Is there any evidence from the HWM profile that there may be backwater from a structure downstream?
* Is the final water surface profile drawn by the analyst reasonable for this measurement?
* Were all reaches used in the final estimate of Q? If not, do they have adequate reasons for what all reaches were not used?

Quality Assessment

* Was there at least 0.5 feet of fall in the reach?
* Was the fall greater than the velocity head? Quality goes down if Fall < Velocity Head.
* Is reach length > 75x the mean depth of the channel?
* Are alpha values large? With increasing alpha, quality goes down.
* Has a sensitivity analysis been done? (sensitivity to water surface profile, roughness, etc)
* Are results consistent from subreach to subreach? If ΔQ >25% then quality is poor.
* Do you suspect that there were abrupt changes in flow regime (subcritical to supercritical and vice versa) in the reach? Beware of 0.8 < F < 1.2.
  + A change from sub-critical to super-critical flow indicates: 1) a sharp contraction and contraction losses that have not been included in the computation; or 2) the possibility of free fall and a discontinuous water-surface slope not related to discharge and computed by the Manning formula.
  + A change from super-critical to sub-critical flow indicates the presence of a hydraulic jump with unevaluated energy losses.
  + However, a gradual change from sub-critical to super-critical flow, as indicated by relatively smooth profiles, might yield valid results. Be careful!
* If the Froude numbers are large, evaluate for the potential for free-surface instabilities which can induce large errors
* Any evidence of expansion? Presence of expansion decreases quality.
  + Spread >0
  + CX <1
* Check velocity distribution across each section (i.e., computed mean velocity for each sub-area in the section). Mean velocity should be largest in the main-channel sub-area. Does the velocity distribution make sense?

**Based on the above, rate the measurement (Good = expected accuracy within 10%; Fair = expected accuracy within 15%; Poor = error possibly 25% or greater). There is no “Excellent” rating for indirect measurements.**

Overall

* Computation package complete per TWRI Book 3 Chapter A1 page 30?
* Is this a good site for the indirect and does the site appear to be properly selected? If this site is less than suitable, are there specific caveats or other details as to why a more suitable location was not chosen?
* Do you concur with the Q for this measurement?
* Do you concur with peak stage assigned to this measurement?
* Do you concur with the quality rating (good, fair, poor) for this measurement?
* Is this measurement reasonable when you compare with Crippen and Bue envelope curves for the region of the country?