

## **TR 1735-2: Protocol Changes between Version 1 and 2**

Version 2 of TR 1735-2 was preliminarily published in 2020 and will be formally published for the 2021 field season. Only this version of the protocol should be used for data collection starting in 2020. Significant changes were made to the verbiage throughout the document, as well as the tables and figures. Some of the big picture changes are highlighted below, but in general data collectors must attend training and review the entire protocol regardless of training attendance and data collection in 2019.

### ***Section 2 How to Use This Protocol***

- 2.2 Critical Concepts
  - 2.2.2 New section. Switched verbiage from identifying “floodplains” to “benches”. This new verbiage is used throughout the protocol (e.g., Section 7.2.2 Bench Height)
  - 2.2.1 and 2.2.3 Cleaned up descriptions of bankfull and scour line indicators

### ***Section 3 Office and Field Evaluation***

- Significant changes were made to Table 3, which outlines reasons for which lotic AIM reaches are not sampled.
- 3.2.2 Field Evaluation Status
  - Added guidance stating that point coordinates can be moved up- or downstream to maximize the number of transects on BLM land and within the same stream size category. Previously, only 5 transects or more were required. However, other reasons to move the point are still limited to only needing 5 sampleable transects.

### ***Section 4 Reach Setup and Monumenting***

- Section 4.2 Monumenting or Relocating Sample Reaches
  - This is a new protocol section
  - The minimum guidance must be followed for all AIM points, but data collectors should discuss monumenting guidance with project leads to ensure any local monumenting needs or requirements are met.

### ***Section 5 Water Quality***

- Section 5.2 Total Nitrogen and Phosphorus
  - Added guidance for the collection of "blank" and "duplicate" samples at 10% of reaches
  - Changed necessary freeze time from 24 hours to 48 hours.
- Section 5.3 Turbidity-
  - Encourage use of averaging function on turbidometers
  - QC ruleset changed to: If any one of the three readings is 30% higher or lower than that of a single reading, it is recommended that you take additional readings of the same water sample until three homogenous readings are obtained.

### ***Section 7 Physical Habitat and Canopy Cover***

- Section 7.1.2 Bankfull width

- Added guidance: “If the bankfull elevation cannot be identified for an individual transect, then use the average bankfull elevation measured throughout the reach for measuring bankfull width. The resulting measurements should be flagged as estimated”
- Section 7.2 Floodplain Connectivity
  - 7.2.1 Added guidance: “If the bankfull elevation cannot be identified for an individual transect, then use the average bankfull elevation measured throughout the reach. The resulting measurement should be flagged as estimated.”
  - 7.2.1 Added guidance to measure thalweg depth at each transect for computation of floodplain connectivity (i.e., bank height ratio)
  - 7.2.2 switched verbiage from identifying “floodplain height” to “bench height”.
  - New figures (Figs. 5 – 9) paired with photos as examples of different valley and bench types

- Section 7.3 Bank Stability and Cover

- Overall verbiage was edited to ensure compatibility with TR 1737-23 – Multiple Indicator Monitoring. Nearly all photos were also updated.
- 7.3.1 added criteria to define the upper plot extent if no bench exists (e.g., V-shaped valley). Plot extends to bankfull height in such situations. Note that this guidance is not present in MIM

Implemented “bench” verbiage to define plot extent. Note that AIM differs from MIM in requiring the upper extent of the plot to be defined by the first bench at or above bankfull.

- 7.3.2 added an explicit question as to whether the bank is covered. In the past, the cover designation was computed in the SARAH app by cover estimates for individual cover components (e.g., foliar cover, cobbles, large wood).

Clarification was also added as to inclusion versus exclusion of overhanging vegetation (yes, within 50 cm of soil surface and does not need to be rooted in the plot), roots (yes), and live versus dead vegetation (yes, if rooted/attached to soil surface), and the height of vegetation to be considered (within 50 cm of soil surface) in estimates of cover.

Lastly clarification was provided to ensure the measurement of foliar and not basal cover.

- Section 7.6 Large Wood

- Changed verbiage from “large woody debris (LWD)” to “large wood”
- Large wood measurements added to side channels
- Added a special situations section addressing forked pieces, root wads, wood embedded in banks etc.

- Section 7.8 Pool Tail Fines (contingent) - New section
- Section 7.9 Flood-Prone Width
  - Significant section edits to improve clarity on riffle selection for measurement and step-by-step field methods
- Other: Omitted U.S. Environmental Protection Agency methods for the ocular estimate of instream habitat complexity

### ***Section 8 Riparian Vegetation***

- Section 8.1 Priority Noxious (core) and Priority Native Woody Riparian (contingent) Vegetation
  - Changed the riparian vegetation core method to focus only on estimates of the frequency of occurrence of priority noxious vegetation based on standardized state species lists.
  - Added a contingent method for assessments of the frequency of occurrence of priority native woody riparian vegetation based on standardized state species lists.
  - Excluded “Other Herbaceous” category (kept “Sedges and Rushes” category)
  - Clarified that the vegetation plot starts at scour line
  - Clarified that priority noxious and priority native woody should be assessed on both the main and side channels.
- Section 8.2 Greenline Vegetation Composition
  - Guidance for integrating MIM greenline vegetation composition measurements with the lotic AIM protocol added in Appendix G
- Omitted U.S. Environmental Protection Agency methods for the ocular estimate of riparian vegetative type, cover, and structure for streams in the continental U.S.

### ***Section 9 Human Influence (covariate)***

- Clarified that data collectors should assess the presence/absence of human influences while standing in the 10 x 10 m plot
- Updates made to the list of considered human influences

### ***Section 10 Photos***

- Minimum of 16 should be taken per sampled reach
- Minimum of 4 photos should be taken for reaches that are not sampled
- Added photo categories and descriptions for:
  - Monumenting (10.3)
  - Critical concepts (10.4)
  - Bank stability and cover (10.5)
  - Flood-prone width (10.6)

### ***Appendix C: Special Situation***

- Section C1. Interrupted flow

- Water quality – specified that: “Similarly, if only stagnant water is present at the F transect, but flowing water is present elsewhere within the reach, take samples where flowing water is present.”
- Pool dimensions – specified that to qualify as a pool it must have inflow at the head crest and outflow at the pool tail
- Additional tips section added with guidance on how to deal with discharge and associated stage height changes while sampling an individual reach
- Section C2. Side Channels
  - Data should now “be collected on side channels regardless of size or presence of water.” Classifications are retained for ‘major’, ‘minor’, or ‘dry’ side channels
  - Data collection however is limited to a single side channel; the side channel with the largest bankfull width
  - Large wood measurements added to side channel data collection
  - Bankfull and bench heights omitted from side channel measurements
- Section C3. Beaver-Impacted Reaches
  - Guidance added defining the characteristics of a beaver-impacted reach: “Impacted is defined as transects influenced by the presence of beaver dams, impounded water upstream of beaver dams, or altered geomorphology resulting from beaver pond formation and maintenance.”
  - Guidance added for resampling reaches that previously did not contain beaver impacts: “Point coordinates for revisit reaches impacted by beaver dams should not be moved from the original location even if they were not previously impacted by beaver activity. Where relevant, seek to assess changes in chemical, physical, and biological conditions resulting from beaver activity.”
  - Benthic macroinvertebrates: guidance added to collect samples from riffle habitat, if present.
- Section C5. Partial Data Collection
  - Guidance added that partially sampled reaches should be rare and not constitute more than 10–20% of your sample reaches per field season.

***Appendix G: Guidance for Integrating MIM Greenline Vegetation Composition Measurements with the AIM Lotic Protocol- New section***

***Appendix H-Implementation of AIM Lotic Protocol in Alaska- New Section***