# Instructions for June 2006 Draft POST-TREATMENT checklist SB – **BIOENGINEERED STREAMBANK STABILIZATION**

### To be used for streambank stabilization features utilizing live plant materials.

 $\underline{\mathbf{Y}}$  = Yes, the question applies and the answer is yes, comment if needed.  $\underline{\mathbf{P}}$  = Partially, the question cannot be answered definitively yes or no, comment suggested.  $\underline{\mathbf{N}}$  = No, the question applies and the answer is no, comment if needed.  $\underline{\mathbf{D}}$  = Don't know, the answer is unknown and cannot be found; preferable to blank.  $\underline{\mathbf{A}}$  = Not applicable, the question or sub-question does not apply to the feature.

See Manual Part III for guidance. See below for 3-letter code key; see glossary for definitions.

THE **"TREATMENT AREA"** MUST BE IDENTIFIED USING THE PROTOCOL FOR DOCUMENTING THE LOCATION OF HABITAT RESTORATION FEATURES. THE SAME TREATMENT AREA THAT WAS DEFINED DURING THE PRE-TREATMENT EVALUATION MUST BE CONSIDERED WHEN COLLECTING THE FOLLOWING DATA. UPDATE THE LOCATION DOCUMENTATION AS NEEDED.

### FEATURE

- 1. Measure the length of streambank stabilized. Count both banks if applicable, though typically one feature will not be on both sides of the stream.
- 2. Specify the current structural condition of feature: EXCL = (Excellent) The feature is intact and structurally sound. GOOD = the feature is intact and generally sound but some wear or undermining is evident. Components may have shifted slightly, but the feature is intact. FAIR = the feature position or condition has been altered significantly. POOR = the feature is visible but has suffered significant movement or damage. FAIL = (Failed) The feature is not visible or remnants are not in any form of designed configuration. (To be better defined)
- 3. Refers to visual evidence of structure malfunction or lack of structural integrity. a. Enter all that apply. Explain problems in comments.
- 4. Refers to location of the structure linearly in the channel, the lateral position of the structure in the channel and the orientation of the structure in relation to stream channel.

### BANK questions should be answered regardless of goals.

- 5. Look for evidence of active erosion in or adjacent to the targeted treatment area.
  - a. Location of erosion within, upstream and/or downstream of the proposed revegetation area AND left and/or right bank (looking downstream).

b. Determine using visual evidence and knowledge of land use and erosion processes.

- 6. If improving streambank conditions was a goal (Pre-project question #3 (PreQ 3)), compare current streambank conditions to pre-treatment streambank conditions (PreQ 2a-b) to determine whether bank erosion was reduced. If it was not a goal, enter A.
- 7. Compare current conditions in the vicinity of the treatment area to pre-treatment conditions (see PreQ 2, use preproject photos, if available, and your knowledge of the site). Determine if there were any detrimental or beneficial effects on streambanks that were not specified in goals. Be sure to evaluate the opposite bank closely. If Y, explain in comments (e.g., baffles stabilized one bank and caused the opposite to erode).
- 8. *Measure* the average bank angle at the treatment site in departure from horizontal, rather than vertical, using a clinometer. A vertical bank is 90°. A 1:1 slope is 45°. A 1½: 1 slope is 33.69°. And, a 2:1 slope is 26.65°. For undercut banks, also record the horizontal distance undercut to the tenth of a foot in the comments. Describe K. Vyverberg's folding rule/protractor method of bank measurement when available.



9. If improving streambank angle was a goal (PreQ 5), compare current bank angle to pre-treatment bank angle (PreQ 4) to determine whether bank angle was reduced. If it was not a goal, enter A and do not answer sub-question.

a. Is the current bank angle equal to or less than the targeted bank angle (PreQ 5a)? If not specified, enter D.

10. Estimate the percent of live plant material originally used in the feature that is currently alive and growing in the treatment area.

# Instructions for BIOENGINEERED STREAMBANK STABILIZATION – POST-PROJECT checklist (pg 2)

- 11. Enter Y if the percent survival meets or exceeds the minimum adequate percent survival (Implementation checklist question #14 ((ImpQ 14)). Enter P if the actual percent survival is 15% or less below the stated minimum adequate percent survival. Enter N if the percent survival is deficient.
- 12. Enter Y if 0-25% of plants in the feature show signs of plant deficiency (such as disease, lack of foliage, low vascular pressure, stunted growth). Enter P if 25-50% of plants within the project feature show signs of deficiency. Enter N if the majority of plants within the project feature show signs of deficiency.

a. Using your best professional judgment, rate the growth and vigor of surviving plants. Vigor refers to strong, active, healthy, well-balanced growth. Be sure to consider seasonal and site conditions affecting plant growth. Enter a rating of FAIL if there are no surviving plants.

- 13. Consider whether irrigation was conducted *as agreed* and *for the duration of time specified* (ImpQ 15a-c). Specify deviations in the comments section. Enter A if no irrigation provisions were proposed.
- 14. Enter the *one* vegetation type that has the greatest percent cover within the treatment area. a. Record whether the dominant vegetation type is composed of native or non-native species.
- 15. If changing the dominant vegetation type was a goal (PreQ 7), see PreQ 7a for the targeted dominant vegetation type. Enter P if there is evidence of a change in dominant vegetation type towards the desired goal. Enter A if change in dominant vegetation type was not a goal of the project feature.
- 16. Total vegetation cover refers to the percent of ground within the treatment area that is *not* bare soil. Estimate visually.
- 17. If increase in vegetation cover was a goal (PreQ 9), compare current percent vegetation cover to that recorded in PreQ 8 to determine if percent cover was increased. Enter A if increase in vegetation cover was not a goal of the project feature.

a. Enter Y if the percent cover meets or exceeds the targeted percent cover (PreQ 9a).

b. Evaluate whether increase in cover was a result of the live plant material used in the feature or of naturallyrecruited vegetation that colonized the site (e.g., even though a willow wall structure did not survive, native alder colonized the stabilized bank behind the structure, leading to increased vegetative cover in the treatment area).

- 18. Measure the percent over-channel canopy cover within the treatment area using a densiometer (see Manual Appendix M). Total canopy cover should represent the *average* throughout the treatment area. For treatment areas longer than 100 feet, canopy measurements should be taken every 50 feet; from the center of the channel, in the center of each 50-foot section. For exceptionally long treatment areas, canopy measurements can be taken every 75-100 feet. Note: percent cover will be the same for features located on opposite banks of the same distance of channel. For upslope projects that are not intended to affect canopy cover, enter A.
- 19. Enter A if increasing channel canopy cover was not a goal of the project feature.
  - a. Enter Y if the percent canopy meets or exceeds the targeted percent (PreQ 11a).

# SUBSTRATE questions should be answered regardless of goals.

- 20. Enter the 1<sup>st</sup> and then the 2<sup>nd</sup> dominant substrates in the treatment area (e.g. GRV/COB). For channel spanning structures, record the dominant substrate upstream of the structure.
- 21. If change in substrate composition was a goal (PreQ 13), compare current substrate composition to targeted substrate composition (PreQ 13a) to determine whether that goal was met. If it was not a goal, enter A.
- 22. *This question always applies; answer Y, N, D.* Compare current conditions in the vicinity of the treatment area to pre-treatment conditions (PreQ 12). Enter Y, if there were any detrimental or beneficial effects on substrate composition that were not specified in goals and explain in comments (e.g. the feature caused silt to accumulate on spawning gravel).

### LWD questions should be answered regardless of goals.

- 23. Count the amount of large woody debris in the targeted treatment area in the two specified size classes. The first entry is for logs with a diameter of at least one foot that are between 6 and 20 feet in length, the second for logs with a diameter of at least one foot that are over 20 feet in length (e.g., enter 1/4)
- 24. LWD recruitment potential refers to the availability of large wood in the vicinity of the stream channel (i.e. if a tree died, would it fall over or into the channel?). If the amount of woody vegetation on the streambanks has been significantly increased, then LWD recruitment potential has been increased. If it was not a goal, enter A.

a. Consider the origin of all LWD currently at the feature and in the treatment area. Enter all that apply.

## CHANNEL questions should be answered regardless of goals.

- 25. List all channel problems near the treatment area, not at a stream or reach level. List all that apply. Record problems even if they are irrelevant to the project goals.
- 26. If improving channel conditions was a goal (PreQ 17), compare current conditions to pre-treatment conditions (PreQ 16) to see if conditions specified in PreQ 17a were achieved.
  - a. List all targeted channel conditions achieved as a result of the feature.
- 27. *This question always applies; answer Y, N, D.* Compare current conditions in the vicinity of the treatment area to pre-treatment conditions (see PreQ 16, use pre-project photos, if available, and your knowledge of the site). Enter Y, if there were any detrimental or beneficial effects on substrate composition that were not specified in goals and explain in comments

### Effectiveness RATING is feature specific.

- 28. Rate the features effectiveness, not the structural condition. Keep in mind the degree to which it met the specific goals. (To be better defined)
  - EXCL = (Excellent) the project feature is performing according to objectives.
  - GOOD = there are some deficiencies in the projects feature's performance, but it is still performing in a satisfactory manner.
  - FAIR = there are some deficiencies in the project feature's performance and, these may cause problems in the future. Some characteristics of the feature, although not enough to cause corrective action at this time, require further scrutiny.
  - POOR = the feature is not performing in a satisfactory manner. Remedial action is required.
  - FAIL = (Failed) the feature has completely failed to meet objectives and/or is causing deleterious effects of habitat.
- 29. Enter all that apply, give details in comments.
- 30. Y if the feature needs or deserves further restoration effort, N if the site doesn't need further restoration or is not suitable for restoration activity.

			Code definitions		
AGG	Aggradation	GRV	Gravel	SIN	Sinuosity
ANC	Anchor failure	GRZ	Grazing	SLC	Silt/clay
ANR	Anchored	HDC	Headcutting	SND	Sand
BAR	Bare banks	HRB	Herbaceous	STB	Stability
BBB	Buried by bedload	INC	Incision	STR	Stranded out of active
BED	Bedrock	INT	Intercepted		channel (horizontally)
BOL	Boulder	LBK	Left bank	STT	Straightening
BRD	Braiding	LWD	Large woody debris	SWA	Stranded out of water
BUR	Buried	MAT	Materials failure		(vertically)
CNR	Concentrated runoff	NAR	Narrowing	TOG	To grade
COB	Cobble	NNS	Non-native species	TRE	Tree
CRF	Cable/rebar failure	NON	None	UNA	Unanchored placement
DNS	Downstream	NTS	Native species	UND	Undercut/undermined
EMG	Emergent groundwater	OTH	Other	UNS	Undersized/under-built
EXC	Excavated	RBK	Right bank	UPS	Upstream
EXH	Exhumed/unburied	REB	Rebar	USG	Unstable soils/geology
FLO	Flow obstructions	RPR	Riparian recruitment	WID	Width/Widening
FPD	Floodplain deposition	SCU	Side cutting	WIN	Within treatment area
GRA	Grass	SHF	Structure shifted	WSH	Washed out
GRC	Grade control	SHR	Shrub		