Interventions	Parameters	Limits			Usage	Alternatives & Complementary interventions
		Min.	Max.	Unit		
Rocks, boulders, riprap	Grain density	156	168	lbf/ft³	- High erosion (DoD maps)	- Gabion mats (rock filled)
	Grain size (use 100-yrs flood)	[D_{cr} maps]		in	- High erosion (τ_* maps)	- Fascines
	Porosity (uniform)	40	45	%	- Stabilize plantings	- Brush groins
	Porosity (graded)	30	35	%	- Stabilize anabranch intakes	- ELJs
	Shape: blocky, non-elongated	--	--	--	- Side cavities (groins)	- Tetrapods
	Ratio D_{85}/D_{15}	1.5	2.5	--	- Tetrapods	- Geotextile
	Revetment thickness	1.5 D_{50}	2 D_{100}	in	- Provide hydraulic habitat	- Slope protection mats
	Safety Factor	1.1	1.3	--		- Rock paving
	Dimensionless bed shear stress	--	0.035	--		- Log crib walls
Engineered Log Jams (ELJs)	Froude number	--	1.0	--	- Entrenchment ratio > 1.4	- Fascines
	Flow depth	--	1.7·Ø	ft	- Ratio of bank height and bankfull flow depth < 1.2	- Brush groins
					- Riffle-pool and plane bed	- Vertical log pile placement
					- Avoid at anabranches	
					- Provide hydraulic habitat	
					- Enhance side cavities	
Plantings: Cottonwood	Cutting length	7	12	ft	- Verification of depth to groundwater level refers to base flow level	- Geotextile
	Depth to ground water level	5	10	ft		- (Dead) fascines
	Burial depth (x times seedling height)	--	0.8·x	ft		- Use pioneer plants (nurse shrubs, e.g., Black sage)
	Scour depth (x times root depth)	--	0.1·x	ft	- Improve habitat shading	
	Flow velocity	--	3	fps	- Increase habitat nutrients	- Pit planting method
	Flow submergence (x times seedling height)	--	0.5·x	ft	- Stabilize banks	- Ball planting method
Plantings: Box elder	Dimensionless bed shear stress	--	0.035	--	- Stabilize side cavities	- Contour planting method
	Cutting length	7	12	ft		- Dormant cutting method
	Depth to ground water level	3	6	ft		- Palisade construction
	Submergence duration	--	85	days/yr		- Wattle fences
Plantings: Willows	Flow submergence	--	0.7	ft		- Brush mattresses
	Cutting length	7	12	ft		- ELJs
	Depth to ground water level	3	5	ft		- Side cavities
	Dimensionless bed shear stress	--	0.1	--		- Slope protection mats
	Scour depth (x times root depth)	--	0.2·x	ft		
Plantings: White Alder	Scour depth	--	1	ft		
	Cutting length	7	12	ft		
	Depth to ground water level	1	5	ft		

Interventions	Parameters	Limits			Usage	Alternatives & Complementary interventions
		Min.	Max.	Unit		
Sediment replenishment (Gravel augmentation)	Deposit length (function of channel width w)	1.5·w	2.0·w	ft	- Parallel sediment deposits on both banks increase deposit erosion - Alternated deposits on both banks enhance morphologic pattern - Continuous discharge variation favors sediment replenishment	- Dam removal - Sediment bypass tunnels
	Deposit width (function of channel width w)	--	2/3·w	ft		
	Deposit creation period	August	October	from/to		
	Sediment size (orientate at discharge of 700 cfs)	[D_{cr} maps]		in		
	Sediment size (orientate at spawning size)	1.26	5.00	in		
	Sediment size (orientate at channel reach)	0.08	10.1	in		
	Sediment volume (entire LYR)	$12.6 \cdot 10^3$		yd^3/yr		
	Sediment mass (entire LYR)	45		t/yr		
Side cavities (Bank scalloping)	Ground level (above main channel bed)	3.0	--	ft	- Creation of shear zones (zero velocity) enhance habitat - Use cHSI maps of 2D model to verify habitat creation	- ELJs improve habitat - Detached groins - Riparian vegetation - Vegetated groins
	Minimum cavity water depth	1.0	--	ft		
	Cavity length to longitudinal cavity interspace ratio	1.0		--		
	Cavity width W to length L ratio	0.5	1.0	--		
	Expansion ratio (w+2W)/w (unilateral/parallel deposit	1.17/1.34	--	--		
Persistent anabranches (Anastomosed channels)	REQUIRES VERIFICATION (INSUFFICIENT STATE OF RESEARCH)					
	Minimum energy slope (Timbuctoo Bend Reach)	0.0021	0.020	--	- At splays (local widenings) - Requires stables banks - Frequent small floods up to bankfull discharge - Evaluation of minimum energy slope against channel slope	- Riparian vegetation - Riprap - ELJs
	Minimum energy slope (Parks Bar Reach)	0.0020	0.019	--		
	Minimum energy slope (Dry Creek Reach)	0.0015	0.014	--		
	Minimum energy slope (Daguerre Point Dam Reach)	0.0019	0.018	--		
	Minimum energy slope (Hallwood Reach)	0.0014	0.013	--		
	Minimum energy slope (Marysville Reach)	0.0006	0.005	--		
Bar lowering	Dimensionless bed shear stress (5-years flood)	--	0.035	--	- Reduction of disconnected bars	- Intense gravel augmentation
	Depth to groundwater level	plant specific		ft		
	DoD map (erosion / deposition)	-1.0	+1.0	ft/yr		

Interventions	Parameters	Limits			Usage	Alternatives & Complementary interventions
		Min.	Max.	Unit		
Berm setback	--	--	--	--	- Apply where possible	--
Fine sediment incorporation in soil	Filter criteria D_{15} (Coarse) / D_{85} (Fine)	--	5	--	- Use where substrate is insufficient to sustain plantings	- Lateral brush layers - Wattle fences - Pole drains - Fascines
	Filter criteria D_{15} (Coarse) / D_{15} (Fine)	4	20	--		
Terracing and floodplain lowering	Dimensionless bed shear stress (5-years flood)	--	0.035	--	- Reduction of disconnected floodplains	- Intense gravel augmentation
	Depth to groundwater level	plant specific		ft		
	DoD map (erosion / deposition)	-1.0	+1.0	ft/yr		
	Construction period	June	Sept.	from/to		

Interventions	Parameters	Limits			Usage	Alternatives & Complementary interventions
		Min.	Max.	Unit		
Large Woody Material (LWM)	MEASURE TO BE SUBSTITUTED BY ENGINEERED LOG JAMS					
Shot-rock removal	MEASURE TO BE OUTWEIGHED BY SEDIMENT REPLENISHMENT					
Streambed reshaping (Swale & backwater enhancement)	DoD map (erosion / deposition)	-1.0	+1.0	ft/yr	- Requires stable terrain, beyond the bankfull channel	- Sediment replenishment - Local bank and channel stabilization
	Flow depth (for 2000 cfs)	1.0	1.50	ft		
	Flow velocity (for 2000 cfs)	0.75	1.00	fps		
	Construction period	June	Sept.	from/to		
	Dimensionless bed shear stress (20-years flood)	--	0.035	--		
General parameters for instream improvement measures	Dimensionless bed shear stress (20-years flood)	--	0.035	--	- Lifespan maps indicate where instream habitat improvement makes sense	- Punctual stabilization - Sediment replenishment
	DoD map (erosion / deposition)	-0.1	+0.1	ft/yr		
	Frequency of grain motion	--	20	yrs		