



Restoration of Rare or Declining Natural Communities:
Beaver Dam Analogues for Riparian and Wet Meadow Areas

Conservation Practice 643 - Specification Sheet

Client:		Date:	
Location:		County:	
Contract #:		Tract/Field:	
Planner:		Acres:	

Description
 Beaver Dam Analogues (BDAs) are hand-built bioengineering structures designed to mimic the function of natural beaver dams. BDAs can accelerate recovery of incised streams and riparian and wet meadow habitats by reducing water velocities, increasing sediment deposition and aggradation, enhancing floodplain connectivity, raising groundwater tables, and increasing habitat complexity. The desired outcome is to initiate restoration of natural processes that self-sustain riparian and wet meadow habitats.

Objectives

<input type="checkbox"/> Expand riparian/wet meadow vegetation	<input type="checkbox"/> Improve floodplain connectivity
<input type="checkbox"/> Enhance capacity to support beavers	<input type="checkbox"/> Improve aquatic habitat complexity
<input type="checkbox"/> Enhance groundwater recharge and raise water table	<input type="checkbox"/> Other:

Narrative Summary
(Planner describe additional information on project. Describe any moderate or high risks identified and provide detail on how the risk(s) are being mitigated or addressed.)

Project Specifications
 Structures consist of a 'post line-wicker weave' foundation that includes installation of wooden posts across the channel with willow or other woody plant cuttings woven between the posts (see Figure 1). Multiple structures are typically installed in a reach to form a complex. *(Planner insert custom narrative describing specific project details including estimated number of structures, types of BDAs- primary/secondary dams, etc.)*

Materials/Equipment	Estimated quantity
Untreated peeler-core posts (pointed, round; ~6-8 ft x 4 in)	
Cuttings (Willow or other woody plant materials)	
Hand tools (shovels, loppers, picks)	
Hydraulic post-pounder	
Chainsaw	

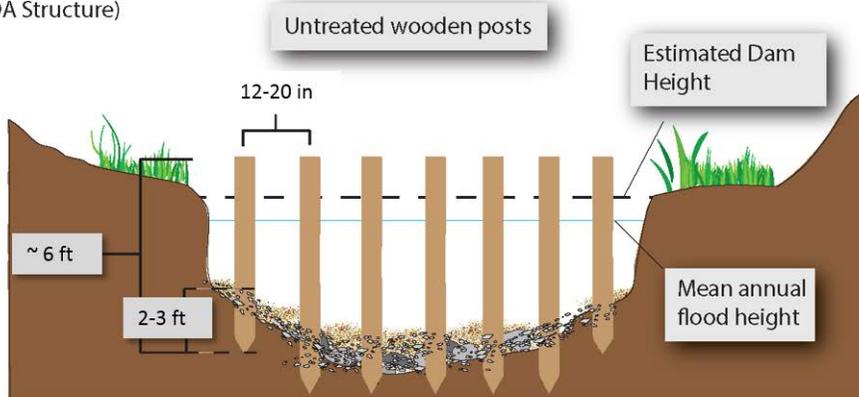
- Installation steps:**
1. Pound posts in a row across channel; post line can be convex (curved downstream); individual posts may be slightly angled if needed to navigate rocks and drive deeper; minimum depth will depend on bed material but should be ≥ 2 ft; posts should not extend > 3 ft above the active channel bed
 2. Weave cuttings tightly between posts; pack regularly with mud/sod to seal
 3. Use soil, cobble/gravel, sod to pack upstream side of structure to seal pond (optional)
 4. Layer cuttings on downstream side of structure, parallel to flow, to create a mattress
 5. Construction is complete when water is adequately ponding and flow reaches desired crest elevation
 6. Use chainsaw to trim post tops to uniform height ~1 ft above crest elevation

Planned installation dates	<i>(planner insert planned installation dates; avoid disturbing vegetation during the primary bird nesting period and abide by in-stream work window requirements)</i>
Permits/notifications	<i>(planner list federal/state/local permits obtained and any notification requirements)</i>
Additional designs, plan maps:	<i>(planner reference additional design documents, plan maps, etc.)</i>

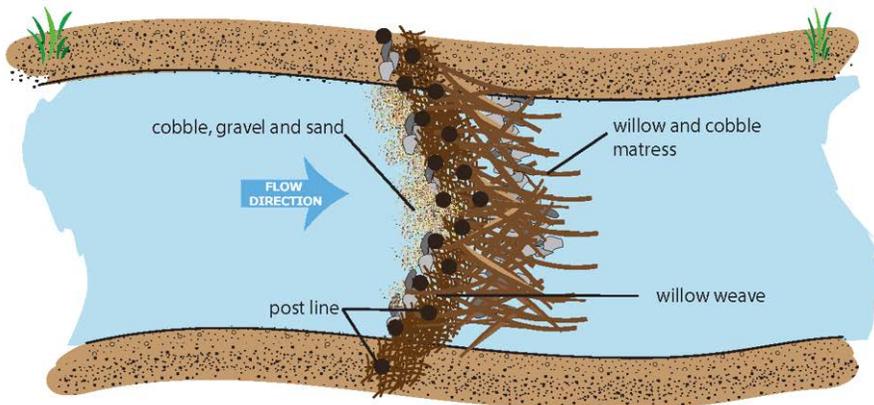
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Figure 1. Cross section and planview of BDA structure. Actual structure details depend on site-specific conditions. Photo shows example BDA one year after installation. (Illustration credit: Elijah Portugal)

Cross Section View
(Generic BDA Structure)



Plan View
(Convex Primary Dam)



Operation and Maintenance

BDA's are intended to be short-term structures to initiate natural processes. Maintenance and repair may be required until objectives for the reach are achieved. Typically, BDA's last until the pool behind the structure fills with sediment and is colonized by riparian vegetation (often < 5 years). Structures will be inspected annually after peak runoff events but more frequent monitoring is encouraged. The amount and type of maintenance needed depends on project objectives. The failure of an individual structure may not be problematic if undesired impacts are not occurring and management objectives are still being achieved in the planned area.

Typical issues and recommended maintenance include:

Structure issue	What to do
End-cutting	extend the length of the structure with additional posts and wicker weave to wrap into upstream banks
Scouring	replace damaged sections; place additional willow mattress parallel to flow on downstream side of structure
Not ponding	plug breach at upstream base of structure with onsite cobble, mud, and herbaceous sod
Water not reaching desired floodplain	raise structure by adding willow weave or install additional structures in between existing BDA's that have filled with sediment
Missing posts	replace dislodged posts to recreate desired flow dispersal

CLIENT'S ACKNOWLEDGEMENT STATEMENT:

The Client acknowledges that:

- a. They have received a copy of the specification and understand the contents and requirements.
- b. It shall be the responsibility of the client to obtain all necessary permits and/or rights, and to comply with all ordinances and laws pertaining to the application of this practice.

Accepted by: /s/ _____ Date: _____

CERTIFICATION:

I have completed a review of the information provided by the client or have conducted a site visit and certify this practice has been applied according to NRCS standards and specifications.

Certified by: /s/ _____ Job title: _____ Date: _____