

## Considerations Checklist for Using Low-Tech Structures to Enhance or Restore Riparian and Wet Meadow Habitats

Low-tech structures for enhancing and restoring riparian and meadow habitats include a wide variety of relatively simple, hand-built, and cost-effective techniques consisting mainly of natural materials including wood, rock, and live plant materials (e.g., Beaver Dam Analogues, Zeedyk techniques). The structures are typically used to alter water flow resulting in sediment deposition which in turn helps spread water onto adjacent floodplains more frequently. Enhancing floodplain connectivity and hydrological function accelerates expansion and growth of mesic vegetation. They can be particularly useful in recovering riparian areas and meadows with incised channels. The structures are relatively short-lived and designed mainly to initiate restoration of natural processes that self-sustain riparian and meadow habitats. Maintenance and repair may be required until objectives for the site are achieved. 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. However, there are some key factors planners should consider when evaluating the appropriateness of low-tech structures and the degree of risk involved.

Instructions: For each factor, select the characteristic that best describes the potential project site. This is not a comprehensive list, but rather, represents some basic considerations related to assessing potential risks to property and infrastructure, as well as, risks to integrity of the structure itself due to hydrologic forces (green = lower risk, yellow/orange = moderate risk, red = higher risk). Planners can use this to identify factors that may need additional review and analysis and to determine the overall appropriateness of low-tech solutions for meeting project objectives.

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<b>Adjacent Land Use</b>	
Is the project in a remote rangeland setting?	
Is the project in an agricultural setting with limited infrastructure?	
Is the project in a rural, suburban, or cropland setting, where structure movement or flooding could affect nearby property, but unlikely to cause damage?	
Is the project in an urban or other setting where structure movement or flooding could damage nearby property?	
<b>Infrastructure</b>	
Is the project area removed from nearby infrastructure?	
Are there downstream bridges? Are they large enough that woody material or sediment from project would be unlikely to affect their structural integrity?	
Are there nearby or downstream culverts? Are they likely to become plugged with woody debris or sediment?	
Are there inlet or outlet structures that could be negatively impacted by woody debris or sediment, or are likely locations for beaver to utilize for dam building purposes?	
<b>Monitoring and Adaptive Management</b>	
Landowner or partner committed to monitoring structures and adaptively managing if negative impacts occur or project objectives are not being met	
Monitoring will occur but ability to correct problems is limited	
No monitoring or maintenance will occur	
<b>Stream Power- Higher power increases the likelihood of structure movement prior to ecological benefits being realized</b>	
Stream is wadable at low flow.	
Stream is <b>not</b> wadable at low flow.	
<b>Stream Order- Larger systems decrease structure viability and increase the likelihood of structure movement prior to ecological benefits being realized.</b>	
1 <sup>st</sup> or 2 <sup>nd</sup> order stream	
3 <sup>rd</sup> order stream	
Mainstem or greater than 3 <sup>rd</sup> order	
<b>Incision- Systems actively downcutting often require more structural/active restoration techniques.</b>	
Out of bank flow occurs on a regular basis	
Out of bank flow rarely occurs. Incised channel lacks inset floodplain.	

**\*\*On sites with factors rating moderate or high risk, low-tech structures may still be viable with a good monitoring and adaptive management plan but careful planning and technical specialist input is needed to minimize potential adverse impacts.**