



## Riparian Restoration

Riparian Herbaceous Cover (CPS 390), Riparian Forest Buffer (CPS 391)

Part of Fibershed’s Carbon Farming Education program, learn more online at: [fibershed.org/carbon-farming](http://fibershed.org/carbon-farming)

*For the purpose of this document, Riparian Restoration involves installing a number of stacked practices that restore a riparian corridor. This document will introduce two of the core practices commonly used for riparian restoration, though these practices are used in other applications as well.*



### Benefits of Riparian Restoration on working lands

- ▶ Increase carbon sequestration in soils and vegetation
- ▶ Increase surface water quality, reduce nutrient loss and sedimentation
- ▶ Stabilize eroding banks
- ▶ Improve surface water infiltration and groundwater recharge
- ▶ Enhance forage quality and quantity in adjacent pastures
- ▶ Enhance pollinator and wildlife habitat
- ▶ Improve biological diversity, with particular benefits to bird populations

### Understanding a Riparian Restoration project on working lands

	It can be helpful to think of a Riparian Corridor in three zones:		
	<b>Zone 1: Bank</b> (at water’s edge)	<b>Zone 2: Upper Bank</b>	<b>Zone 3: Upland</b>
<b>Primary Functions</b>	Stabilize stream banks and promote water recharge. Provide food for in-stream wildlife.	Filter water and nutrients and slow runoff. Provide shade to streambed and habitat for terrestrial wildlife. Catch debris during flood events.	Slow and spread stormwater flow. Reduces sediment from runoff. Transition from riparian to upland ecosystems provides diverse habitat for terrestrial wildlife.
<b>Dominant Plant Species</b>	Typically composed of vegetation which has root masses capable of withstanding high flow events; eg. sedge family ( <i>Cyperaceae</i> ), rush family ( <i>Juncaceae</i> ), willows ( <i>Salicaceae</i> ) and a variety of grasses. These root systems provide bank stability.	Native trees, shrubs, grasses and forbs that tolerate periodic flooding, have woody roots and multiple stems, and will provide sufficient shade to the stream channel.	Primarily diverse blend of native grasses and forbs with deep root systems. Trees and smaller woody perennials that thrive in riparian areas.

*“Agricultural land management practices can measurably increase rates of carbon sequestration, resulting in enhanced soil quality, soil water holding capacity, increased soil carbon and forage production.”*

– Ryals and Silver 2013



## Planning and Installing Riparian Restoration Projects

- ▶ Choose regionally adapted plants compatible with the soil, water, wind and light conditions of your site.
- ▶ In some areas or zones, passive revegetation (exclusion of livestock) may accomplish your design objectives; assess if this may work for your site.
- ▶ Sourcing plants: Propagate plants from seed, cuttings, or purchase from a local nursery to plant directly into the ground.
- ▶ Protection from animal impact: Consider belowground (gopher) protection and temporary or permanent fence to protect newly installed plants. Plan for fencing to control livestock impact in the whole riparian corridor.
- ▶ Determine if irrigation is needed for plant survival. Until plants are established, they may need to be watered regularly during the dry months.
- ▶ Consider your access and terrain to determine the type of irrigation system such as drip irrigation, self-watering device, or pump water.
- ▶ Sensitive wildlife species need to be considered when planning your installation. For example: installation schedule and techniques must avoid spawning time and sediment disruption for salmonids.



## Managing and Maintaining Riparian Restoration Projects

- ▶ Hand weeding is typically necessary in early years of establishment; after three years it may be possible to incorporate seasonal flash grazing for weed and fire mitigation.
- ▶ Maintain protective measures for plants and sensitive riparian areas.



## Complementary Practices

- ▶ Critical Area Planting (CPS 342)
- ▶ Streambank and Shoreline Protection (CPS 580)
- ▶ Stream Habitat Improvement and Management (CPS 395)
- ▶ Tree/ Shrub Establishment (CPS 612)
- ▶ Fencing (CPS 382)
- ▶ Mulching (CPS 484)
- ▶ Compost (CPS 808)

*Fibershed encourages landowners to reach out to their local technical service providers before beginning a Riparian Restoration project for assistance with cost estimates and other relevant expertise with these sensitive ecosystems.*



## Technical Support

- ▶ Resource Conservation District (see CARCD's **website directory** to find one serving your area)
- ▶ Natural Resources Conservation Service (see NRCS's **service center** locator to find which office serves your area)
- ▶ UC Cooperative Extension offices: (see [ucanr.edu/About/Locations/](http://ucanr.edu/About/Locations/) locator to find which office serves your county)
- ▶ Point Blue: [www.pointblue.org](http://www.pointblue.org)



## References: See Resource Guide

- ▶ NRCS Riparian Systems: [www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs143\\_010137.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_010137.pdf)
- ▶ NRCS Riparian Areas Environmental Uniqueness, Functions, and Values: [www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/?cid=nrcs143\\_014199](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/?cid=nrcs143_014199)



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