

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

STREAM HABITAT IMPROVEMENT AND MANAGEMENT

(Ac.)

CODE 395

DEFINITION

Maintain, improve or restore physical, chemical and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history requirements of desired aquatic species.

Assessment Protocol, Version 2 or comparable evaluation tool

- When applied, result in a conservation system that meets or exceeds the minimum quality criteria for stream habitat established in Section III of the FOTG.

PURPOSE

1. Provide suitable habitat for desired fish and other aquatic species.
2. Provide stream channel and associated riparian conditions that maintain stream corridor ecological processes and hydrological connections of diverse stream habitat types important to aquatic species.

Manage adjoining riparian areas to support a diverse vegetation community suitable for the site conditions and desired ecological benefits. Such benefits include stream temperature moderation, recruitment of instream large wood and fine organic matter, input of riparian nutrients, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface runoff.

CONDITIONS WHERE PRACTICE APPLIES

All streams and their adjoining backwaters, floodplains, associated wetlands, and riparian areas where geomorphic conditions or habitat deficiencies limit reproduction, growth, survival and diversity of aquatic species.

Design in-stream structures to be compatible with the dynamic nature of streams and rivers, facilitate natural geomorphic recovery when possible, and minimize disruption of recreational and other traditional uses of the stream corridor.

Structures installed for the purposes of this standard will not:

CRITERIA

General Criteria Applicable to All Purposes

Planned stream habitat improvements will:

- Address the aquatic species and life history stages for which the stream is being managed
- Be based on a site-specific assessment of local hydrology, channel morphology, geomorphic setting, fish and other aquatic species present, riparian and floodplain conditions, and any habitat limitations including water quantity and quality, food supply, and restriction of upstream and downstream movement of aquatic species using the NRCS Stream Visual

- Impede or prevent passage of fish and other aquatic organisms at any time, unless intended to isolate populations of native species of conservation concern
- Cause excessive bank erosion
- Cause unintentional lateral migration, aggradation or degradation of the channel
- Hinder channel-floodplain interactions.

Where practical, restore or maintain stream habitat and channel forming processes such as natural flow regime, meander migration, sediment transport, recruitment and storage of large wood, and floodplain interactions with the stream.

All stream and riparian activities will occur within state and federal guidelines with regard to timing of spawning, incubation, and rearing of aquatic organisms, and breeding and nesting of terrestrial organisms. Specifically, instream work shall be restricted to outside the spring spawning season (e.g. March-May for darters).

All measures implemented under this practice shall comply with all applicable federal, state, and local laws. All required permits shall be obtained prior to the installation of any stream improvement measure.

Manage livestock to sustain a healthy stream corridor and associated habitats.

Additional Criteria to Provide Suitable Habitat for Desired Fish and other Aquatic Species

Boulder clusters shall only be installed in stable wide shallow streams with high riffle to pool ratios consisting of coarse gravel to cobble and lacking fish cover. Boulders shall be sized to ensure stabilization at bank-full flows. Placement shall be near the center of the thalweg (line of fastest stream flow) in areas other than riffle heads.

Large woody debris (whole trees, logs, root wads) installed for fish habitat shall be limited to streams lacking adequate riparian forest buffers, be properly cabled to streambanks rather than streambeds, and have as many limbs or roots as possible left untrimmed.

Large woody debris removed during clearing and snagging operations shall be limited to only individual jams that pose a risk to bank erosion or structures (e.g. roads and bridges).

Log structures shall avoid the use of softwoods (conifers) and soft hardwoods such as river birch.

Additional Criteria to Provide Stream Channel and Associated Riparian Conditions that Maintain Stream Corridor Ecological Processes and Hydrological Connections of Diverse Stream Habitat Types Important to Aquatic Species

Levee removal to reconnect stream channels to floodplains shall consist of entire levee removal rather than breaches.

Riparian forest buffer (391) restoration shall consist of hardwood trees and/or shrubs

capable of providing leaf litter for instream habitat rather than conifers.

CONSIDERATIONS

Any stream habitat management project is most effective when applied within the context of overall watershed conditions and with clear objectives for stream management goals.

In-stream habitat enhancement should only be performed in streams that actively experience sediment flushing.

Stream habitat management provisions should be planned in relation to other land uses that may affect stream corridors.

Before designing and implementing stream habitat improvements, consider the known or expected concerns within the watershed, such as: point and non-point source pollution; water diversions; and land management activities likely to influence stream habitat conditions. Additional measures that should be taken singularly or in combination to improve stream habitat include:

1. Complete a general assessment of watershed conditions that are likely to affect the functions of the stream and its riparian area.
2. Incorporate stream habitat improvements into a conservation plan that addresses soil quality, prescribed grazing, nutrient management, integrated pest management, and other management practices for reducing non-point sources of pollution.
3. Incorporate stream habitat improvements such as tree revetments, cover logs, cribbing, and lunkers when applying the Streambank and Shoreline Protection standard (580).
4. Provide fish passage upstream and downstream and allow movement of other aquatic species and organic matter to the extent possible and when compatible with state and federal fish management objectives (see Code 396 – Fish Passage; Stream Crossing-578).
5. Reduce or manage excessive runoff due to watershed development, roads or land-use activities.

6. Restore or protect riparian and floodplain vegetation and associated riverine wetlands.
7. Maintain adequate in-stream flows to sustain diverse habitats for fish and other aquatic species, especially during critical life history stages of spawning, incubation and rearing.
8. Retrofit existing dam principal spillways with bottom water releases, low flow orifices, and splash pads to mitigate the effects of the dam on downstream water quantity and quality (primarily temperature, oxygen, and flows).
9. Provide heterogeneous and complex physical habitat components consistent with the physiographic setting and important to fish and other aquatic species in the watershed. These include suitable spawning substrates, structural elements such as boulders (gravel/cobble streams), slab rock (shallow gravel pools or bedrock streams), and/or large wood where appropriate, resting pools, overhead cover, and diverse riparian plant communities.
10. Provide instream barriers to exclude aquatic nuisance species from upstream habitats where prescribed by state and federal fish management agencies to protect native fish populations.
11. Provide screens on water pumps, diversion ditches, or any area where unintentional entrainment of aquatic species is likely to occur.
12. Improve floodplain-to-channel connectivity for development of seasonal or permanent backwater, wetland and off-channel habitats consistent with the local climate and hydrology of the stream.
13. Maintain natural surface water, hyporheic (streambed under-flow), and ground water interactions to the extent possible.
14. Control spread of exotic plant and animal species.
15. Manage recreational and other land use activities to minimize impacts on stream banks, fish habitat structures, riparian vegetation, and water quality.

PLANS AND SPECIFICATIONS

Plans and specifications shall be developed for each site where stream corridor management and improvement actions are to be implemented.

The plan will include detailed goals and objectives of the planned actions, a site description, the dates and sequence in which improvements or management actions will be completed, a vegetation planting plan, maintenance requirements, and monitoring guidelines for evaluating the effectiveness of the conservation actions. The plan shall specify:

- (a) Location and extent of modification of the stream reach to accomplish the planned purpose
- (b) Riparian plant species and stocking rates if needed to accomplish the planned purpose
- (c) Planting dates, as well as the care and handling of seed or other planted materials to ensure an acceptable rate of survival
- (d) Site protection and preparation requirements for establishment or recruitment of riparian vegetation if needed
- (e) Drawings to illustrate installation or implementation requirements.

OPERATION AND MAINTENANCE

A detailed operation and maintenance plan shall be developed for all applications. The plan shall provide for periodic inspection and prompt repair or modification of any structures that are found to cause excessive streambank or streambed instability. All structural measures shall be evaluated on an annual basis. Post-project monitoring and evaluation of stream and riparian habitat conditions shall be conducted to determine if actions implemented are providing for management of the stream corridor habitats as planned. Any repair actions, if needed, shall comply with state and federal guidelines for protecting spawning, incubation and rearing times of aquatic species and breeding and nesting times of terrestrial species.

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