NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

STREAM HABITAT IMPROVEMENT AND MANAGEMENT

(Acre)
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.

PURPOSE

- Provide suitable habitat for desired aquatic species and diverse aquatic communities.
- Provide stream channel and associated riparian conditions that maintain ecological processes and connections of diverse stream habitat types important to aquatic species.

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.

CRITERIA

General Criteria Applicable to All Purposes

Manage adjoining riparian areas to support diverse natural vegetation 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 and terrestrial insects, streambank stability and filtration of contaminants from surface runoff.

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, aquatic species, 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 Assessment Protocol 2
- when applied, result in a conservation system that meets or exceeds the minimum quality criteria for stream habitat established in the Stream Visual Assessment Protocol 2 (≥7.0) for the following elements:
    - barriers to aquatic species movement
    - fish habitat complexity
    - aquatic invertebrate habitat

Refer to Resource Concerns and Planning Criteria for RMS in Section III of the Florida NRCS FOTG - Page 13 – Inadequate habitat for fish and wildlife – habitat degradation.

Alternate assessment methods can be used as planning criteria based on the discretion of the NRCS State Biologist.

Do not plant any species listed on the Florida Department of Agriculture and Consumer Services (FDACS) or the FDEP noxious or prohibited weed lists.

Additionally, do not plant any species listed as a Category 1 invasive species by the Florida Exotic Pest Plant Council (see Florida Field Office Technical Guide (FOTG) Section I [f] [4]).

Ensure all stream and riparian activities 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.

Obtain all required permits prior to installation of any stream improvement measures.

Structures installed for the purposes of this standard will not:

- impede or prevent passage of fish and other aquatic organisms at any time;
- cause excessive stream bank erosion;
- cause unintentional lateral migration, aggradation or degradation of the channel; or
- hinder channel-floodplain interactions.

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

Manage livestock to prevent streambank erosion and sedimentation, bank trampling, over-grazing, and contamination of the stream from livestock waste.

Impact to cultural resources, wetlands, and Federal and State protected species need to be avoided or minimized to the extent practical during planning, design, and implementation of this conservation practice in accordance with established National and Florida NRCS policy as stated in the General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures Handbook (NPPH) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH); and Subpart F of The National Environmental Compliance Handbook (NECH).

CONSIDERATIONS

Incorporate native plants into the plan wherever possible.

Consider energy requirements when selecting methods for improvement management of stream habitat; selecting the least energy consumptive methods that meet the client objective and address the resource concern(s).

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.

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. Plan stream habitat management provisions in relation to other land uses that may impact stream corridors.

Before designing and implementing stream habitat improvements, consider the known or expected problems within the watershed such as point and non-point source pollution, water diversions, and land management activities likely to influence stream habitat conditions.

Consider utilizing in-stream structures such as flow deflectors or habitat elements to provide stream stability until the channel and adjacent riparian area begins to function similar to the habitat of a complex stream in dynamic equilibrium. Consider the following options, used singularly or in combination, to improve stream habitat:

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, nutrient management, pest management, and other management practices for reducing non-point sources of pollution (See Florida NRCS Conservation Practice Standards Nutrient Management, Code 590, and Pest Management, Code 595).
3. 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 NRCS Conservation Practice Standard Fish Passage, Code 396).

4. Reduce or manage excessive runoff due to watershed development, roads, or land-use activities.
5. Restore or protect riparian and floodplain vegetation and associated riverine wetlands.
6. Control spread of noxious or invasive plant and animal species.
7. Maintain adequate in-stream flows to sustain diverse habitats for aquatic species, especially during critical life history stages of spawning, incubation, and rearing.
8. Provide heterogeneous and complex physical habitat components consistent with the physiographic setting and important to aquatic species in the watershed. These include suitable spawning substrates sediment-free spawning gravel, boulders, large wood, resting pools, overhead cover, riparian vegetation and stable banks.
9. Provide barriers/screens to exclude fish and other aquatic species from water pumps, diversion ditches, or any area where unintentional entrapment could occur.
10. Provide barriers to exclude aquatic nuisance species from stream habitats where prescribed by the appropriate state and federal fish management agencies.
11. 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.
12. Maintain natural surface water and ground water interactions by managing ground water withdrawals that could affect the health and sustainability of the stream system.
13. Manage recreational and other land use activities to minimize impacts on stream banks, riparian vegetation, and water quality.

PLANS AND SPECIFICATIONS

Plans and specifications need to be in keeping with this standard and need to describe the details adequately so the practice can be applied to meet intended purpose.

Planned stream habitat improvements need to:

- Be based on an assessment of watershed conditions that affect the physical, biological, and chemical conditions of the stream and its riparian area.
- Be based on an assessment of current stream and riparian conditions. The assessment needs to evaluate channel morphology, geomorphic setting, aquatic species, riparian and/or floodplain conditions, and any habitat limitations including restriction of upstream and downstream movement of aquatic species.
- Emphasize the establishment of an ecologically self-sustaining stream-riparian system consistent with the watershed conditions and geomorphic setting.
- List the aquatic species and life history stage for which the stream is being managed.
- Document the following:
  - site map or sketch of current and planned conditions;
  - minimum depth of water needed to sustain ecological functions at key seasons or periods of the year;
  - types, locations, sizes and sketches of any water control structures required to be installed or maintained;
  - and desired riparian plant species and the means of establishing species (rates of seeding/planting, minimum quality of planting stock, method of establishment) and/or maintaining them to promote the desired ecological site.

OPERATION AND MAINTENANCE

Develop a detailed operation and maintenance plan for all applications. The plan will include periodic inspection and prompt repair or modification of any structures that are found to

cause excessive streambank or streambed instability. Evaluate all structural measures annually. Any repair actions, if needed, will comply with state and federal guidelines for protecting spawning, incubation and rearing times of aquatic species, and breeding and nesting times of terrestrial species.

Control noxious weeds and/or exotic invasive plants as needed, refer to Florida NRCS Practice Standards Brush Management, Code 314, and Herbaceous Weed Control, Code 315. If herbicides are needed, refer to Florida NRCS Conservation Practice Standard Integrated Pest Management, Code 595; follow current Univ. Florida, IFAS recommendations (http://edis.ifas.ufl.edu/WG006); and adhere to label instructions.

REFERENCES

Bureau of Land Management. 1998. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas. TR-1737-15.

Federal Interagency Stream Restoration Working Group(FISRWG). 1998. National Engineering Handbook (NEH) Part 653: *Stream Corridor Restoration: Principles, Processes, and Practices*.

Florida Department of Environmental Protection

NRCS. 2005. National Biology Handbook, Aquatic and Terrestrial Habitat Resources.

NRCS. 2007. NEH-654 – Stream Restoration Design Handbook.

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