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.

PURPOSE

Provide suitable habitat for desired fish and other aquatic species.

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.

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

Use of this standard will comply with all applicable federal, state, and local laws and regulations. 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.

Native plant species will be used whenever possible. Known invasive species will not be used.

Stream Habitat Improvement and Management will be established to species of permanent vegetation that accomplishes the design objective, is adapted to the site, and does not function as hosts for field crop diseases or become a source of weeds in the crop field.

Herbaceous species selection, seedbed preparation, seeding mixes, seeding rates, dates, depths, fertility requirements, site adaptation and planting methods will be consistent with the requirements in the Indiana (IN) NRCS Seeding Tool Guidelines, and/or Tables in Indiana (IN) Field Office Technical Guide (FOTG) Standard (390) Riparian Herbaceous Cover.

Woody species selection, seedling rates, and site adaptation will be consistent with the requirements in the IN NRCS Seeding Calculator and/or Tables in IN FOTG Standard (391) Riparian Forest Buffer. Tree and/or shrub plantings will follow site preparation, planting dates, planting and storage guidelines as detailed in IN FOTG Standard (612) Tree/Shrub Establishment.

Adjoining riparian corridors will be managed according to IN FOTG Standards (391) Riparian Forest Buffer, or (390) Riparian Herbaceous Cover as needed to benefit the target species. Benefits may include stream temperature moderation, recruitment of in-stream 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.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service State Office, or download it from the Field Office Technical Guide for your State.

Planned stream habitat improvements will:

1. address the aquatic species and life history stages for which the stream is being managed,
2. 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 Assessment Protocol, Version 2 or comparable evaluation tool,
3. generally involve restoration of an appropriate channel width-to-depth ratio, suitable riffle-pool complexes, well-vegetated banks, and/or stream length-gradient relationships in a meandering stream consistent with local conditions and stream geomorphology, and
4. when applied, result in a conservation system that meets or exceeds the minimum quality criteria for stream habitat established in Section III of the IN FOTG.

Accelerated erosion associated with un-vegetated banks or bank erosion at rates not appropriate for the stream system will be stabilized using IN FOTG Standard (580) Streambank and Shoreline Protection. Soil-bioengineering techniques will be used where appropriate. See NRCS Engineering Field Handbook, Chapter 16 Streambank and Shoreline Protection for guidance.

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 will be installed according to the Federal Stream Corridor Restoration Handbook (NEH-653) or other NRCS-approved resource.

Structures installed for the purposes of this standard will not:

1. impede or prevent passage of fish and other aquatic organisms at any time, unless intended to isolate populations of native species of conservation concern,
2. cause excessive bank erosion,
3. cause unintentional lateral migration, aggradation or degradation of the channel,
4. hinder channel-floodplain interactions.

Structures placed across the channel to prevent stream incising, or to reduce the upstream energy slope to prevent bed scour, will follow IN FOTG Standard (584) Stream Channel Stabilization.

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.

When present, livestock will be managed to prevent streambank erosion, bank trampling, over-grazing, and contamination of the stream from livestock waste. An approved grazing plan will be developed according to IN FOTG Standard (528) *Prescribed Grazing*.

CONSIDERATIONS

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:

Complete a general assessment of watershed conditions that are likely to affect the functions of the stream and its riparian area. See *Stream*A*Syst: A Tool to Help You Examine Stream Conditions on Your Property*

Incorporate stream habitat improvements into a conservation plan that addresses soil quality, prescribed grazing, nutrient management, pest management, and other management practices for reducing non-point sources of pollution.

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.

Reduce or manage excessive runoff due to watershed development, roads or land-use activities.

Restore or protect riparian and floodplain vegetation and associated riverine wetlands.

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.

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 and/or large wood where appropriate, resting pools, overhead cover, and diverse riparian plant communities.

Provide in-stream barriers to exclude aquatic nuisance species from upstream habitats where prescribed by state and federal fish management agencies to protect native fish populations.

Provide screens on water pumps, diversion ditches, or any area where unintentional entrainment of aquatic species is likely to occur.

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.

Maintain natural surface water and ground water interactions to the extent possible.

Control spread of exotic plant and animal species.

Manage recreational and other land use activities to minimize impacts on stream banks, riparian vegetation and water quality.

Management practices and activities should not disturb cover during the primary nesting period of April 1 through August 1.

Consider requesting technical assistance from an IDNR Division of Fish and Wildlife's Fisheries or Wildlife Biologist, U.S. Fish and Wildlife Service Biologist, or NRCS Biologist.

Drainage is important to many Indiana land users, but drainage projects can also be detrimental to ecological integrity. Consider referring land users to the *Indiana Drainage Handbook* for information about laws and regulations, "Best Management Practices", and procedures for timely access to regulatory personnel

PLANS AND SPECIFICATIONS

Plans and specifications will be developed for each site where stream corridor management and improvement actions are to be implemented. Plans will include the following:

- Plan view
- Profile
- Cross section (typical or other)
- Location of excavation or borrow
- Species of plants to be established.
- Seeding rates.
- Seeding dates.
- Establishment procedure.
- Planned rates and timing of nutrient application.
- Other information pertinent to establishing and managing the species or species of plants to be established.
- If grazed, use a prescribed grazing plan according to NRCS IN FOTG Standard (528) Prescribed Grazing.

Plans and specifications for the establishment and management of the species or species of plants to be established may be recorded in narrative form, on job sheets, or on other forms.

OPERATION AND MAINTENANCE

Any plant species, whose presence or overpopulation may jeopardize this practice, will be controlled. Spraying or other control methods will be performed on a "spot" basis to protect forbs/legumes that benefit native pollinators and other wildlife.

An operation and maintenance plan will be provided to and reviewed with the landowner. The plan will include the following items and others as appropriate.

1. Fertilize to maintain a vigorous vegetative cover in the protected area. Caution should be used with fertilization to maintain water quality.

2. Promptly repair eroded areas.
3. Reestablish vegetative cover immediately where scour erosion has removed established seeding.
4. Periodically inspect area for any new maintenance items and take immediate action to protect from further damage or deterioration.

REFERENCES

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NRCS. 1999. *Conservation Corridor Planning at the Landscape Level: Managing for Wildlife Habitat*, USDA Natural Resources Conservation Service, Part 190 - National Biology Handbook.

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Oregon State University Extension Service and NRCS. 2001. EM 8761- *Stream*A*Syst: A Tool to Help You Examine Stream Conditions on Your Property*. Watershed Science Institute.