Wetland Restoration Criteria Guidelines

for the USDA NRCS in Vermont

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Executive Summary

The 2018 Farm Bill included new language on various restoration, management, and planning provisions for ACEP-WRE, including a requirement for State-specific criteria and guidelines to be used in the establishment and restoration of appropriate vegetative communities on wetland reserve easements. (NRCS NB 300-20-17 LTP). The ACEP interim rule was finalized and is now official policy as noted in Part 528.131 B. of the ACEP manual: Development of State-specific Wetland Restoration Criteria and Guidelines. The criteria guidelines for the USDA NRCS in Vermont are identified herein. These Wetland Restoration Criteria and Guidelines (WRCG), identify historical wetland types, potential alternative plant communities and associated requirements and limitations, and the land eligibility considerations and limitations for the enrollment of adjacent lands. Additionally, the WRCG details procedures for documenting the transition of soils, hydrology, vegetation, and wildlife habitat from unrestored to restored wetland conditions.

Wetlands Loss in Vermont

The USFWS estimates that Vermont experienced approximately 35% (121,000 acres) of all wetlands being converted to non-wetlands between 1780 and 1980. The majority of those conversions were to clear and drain land for agricultural use. Only 220,000 acres of wetlands remained in Vermont in 1980 out of the estimated 341,000 acres. (Dahl, 1990)

Historical Wetland Types

The wetland types found in Vermont at present were also found in pre-European settlement times. Though human-induced wetlands conversion has decreased the overall acreage of wetlands statewide and degraded or removed the functions of converted wetlands. Human-introduced invasive plants and insects have also altered the species composition of many wetland natural communities. The most common historical wetland types that are restored through USDA NRCS wetlands restoration activities in Vermont include: forested wetlands, scrub-shrub swamps, and wetland meadows. USDA NRCS Vermont utilizes the nomenclature of the Vermont-specific natural communities book Wetland, Woodland, Wildland (2019) to describe wetland types, from a primarily vegetation-based perspective, for historical, inventory, and restoration criteria purposes. We also use the Hydrogeomorphic (HGM) Classification System when describing wetlands landscape positions, predominant water sources, and hydrodynamics. For the WRCG, historical and present-day wetland types will be organized first by HGM class and next using the Wetland, Woodland, Wildland terminology. Below are noted the historical wetland types that are typical of USDA NRCS Vermont wetlands restoration project goals to restore. Please note that the vegetation-based natural communities may occur in more than one HGM class. Detailed descriptions of the natural communities' characteristics, associated habitats, statewide distribution and conservation status can be found in the book Wetland, Woodland, Wildland (2019).

Riverine HGM Class

Floodplain forests including: Boreal Floodplain Forest, Silver Maple-Ostrich Fern Floodplain Forest, Silver Maple-Sensitive Fern Floodplain Forest, Maple-Green Ash Swamp, Shallow Emergent Marsh, Sedge Meadow, Alluvial Shrub Swamp

Common wetland functions include: groundwater recharge/discharge, surface water storage, flood flow alteration, fish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization, wildlife habitat

Lacustrine Fringe HGM Class

Lakeside Floodplain Forest, Maple-Green Ash Swamp, Cattail Marsh

Common wetland functions include: groundwater recharge/discharge, surface water storage, flood flow alteration, fish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization, wildlife habitat

Slope HGM Class

Red Maple-Black Ash Seepage Swamp, Northern Hardwood Seepage Forest, Northern White Cedar Seepage Swamp, Hemlock-Balsam Fir-Black Ash Seepage Swamp

Common wetland functions include: groundwater recharge/discharge, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, wildlife habitat

Mineral Flat HGM Class

Wet Clayplain Forest, Shallow Emergent Marsh, Sedge Meadow, Alder Swamp

Common wetland functions include: groundwater recharge/discharge, surface water storage, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, wildlife habitat

Organic Flat HGM Class

Red Maple-Northern White Cedar Swamp, Northern White Cedar Swamp, Spruce-Fir-Tamarack Swamp, Maple-Green Ash Swamp, Sedge Meadow, Cattail Marsh, Alder Swamp

Common wetland functions include: groundwater recharge/discharge, surface water storage, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, wildlife habitat

Wetlands Restoration- General Information

The 2019 ACEP Rule notes that:

"*Wetland restoration* means the rehabilitation of degraded or lost wetland and associated habitats pursuant to published State-specific criteria and guidelines developed in coordination with the State technical committee in a manner such that:

(1) The original, native vegetative community and hydrology are, to the extent practical, reestablished; or

(2) A hydrologic regime and native vegetative community different from what likely existed prior to degradation of the site is established that will:

(i) Substantially replace the original habitat functions and values while providing significant support or benefit for migratory waterfowl or other wetland-dependent wildlife; or

(ii) Address local resource concerns or needs for the restoration of wetland functions and values for wetland dependent wildlife as identified in an approved State wildlife action plan or NRCS national initiative."

This document notes the wetland restoration criteria and guidelines for the USDA NRCS in Vermont.

According to the current USDA NRCS Vermont wetlands restoration conservation practice standard, wetlands restoration is defined as "the return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site." The practice purpose is noted specifically to "restore wetland function, value, habitat, diversity, and capacity" through the restoration of wetland hydrology, native hydrophytic vegetation, hydric soil maintenance, and fish and wildlife habitats. (NRCS, 2020).

In Vermont, the USDA NRCS partners with the US Fish and Wildlife Service Partners for Fish and Wildlife Program to restore wetlands on Agricultural Conservation Easement Program Wetland Reserve Easement component conservation easements. Most restoration projects focus on restoring agriculturally altered wetland, riparian areas, and adjacent land within the easements to conditions prior to the pre-European settlement time period. Whenever possible nearby undisturbed wetlands are used as a reference of prior conditions that the agriculturally altered wetland can be restored to.

Common approaches to restoring all wetland types include restoration of wetlands macrotopography and microtopography, plugging or filling ditches, plugging or breaking drainage tiles, berm removal, culvert removal, woody debris placement, returning natural channel sinuosity to straightened streams, control of invasive plant species, and establishment of native vegetation through artificial and natural regeneration. Whenever possible, nearby relatively undisturbed wetlands are used as references for the prior condition which restoration site soils, hydrology, and vegetation should be restored to.

Wetlands Restoration- Alternative Plant Communities

Wetlands restoration projects with the USDA NRCS in Vermont typically do not include goals for restoring alternative plant communities. There are however certain circumstances where the restoration of alternative plant communities is an appropriate component of a Wetland Reserve Plan of Operations (WRPO). These circumstances include:

- Hydrologic conditions are significantly altered compared to the pre-European contact time period and restoration of former plant communities isn't feasible
- Changes in precipitation and associated flooding regimes as a result of climate change
- Site restrictions, such as boundary ditches, adjacent non-easement properties, adjacent roads and railroads, and other restrictions limit the feasibility of restoring former plant communities
- Soil subsidence in formerly high organic matter content soils has resulted in soil and hydrologic changes that limit the feasibility of restoring former plant communities
- Invasive pests that alter plant communities which in turn alter site hydrology. Ex. Emerald ash borer mortality impacts on black ash resulting in higher water tables
- Other concerns, including mosquito management, limit the feasibility of restoring former plant communities

Alternative plant communities may include any of the natural communities identified in this WRCG as a historical native plant community occurring in Vermont. Those are described in detail in the Historical Wetland Types section above and in Wetland, Woodland, Wildland (2019). The USDA NRCS in Vermont does not have any restrictions on the extent to which alternative plant communities may be established or managed for an ACEP WRE easement. Generally alternative plant communities will only be used if wetland restoration is feasible and circumstances, as noted above, make restoration of the prior historical wetland types unfeasible. Alternative plant communities will either:

- Substantially replace the original wetland type's habitat functions and values while providing significant support or benefit for migratory waterfowl or other wetland-dependent wildlife, or
- Address specific resource concerns or needs for the restoration of wetland functions and values for wetland-dependent wildlife as identified in State wildlife action plans or NRCS national initiatives, and the specific plans wherein the resource concerns or needs were identified.

Lands of Special Environmental Significance

For the purposes of this WRCG lands of special environmental significance include land that:

- Provides habitat for rare, threatened, or endangered Federal or State Species, or
- Provides habitat for Species of Greatest Conservation Need identified in the Vermont Wildlife Action Plan, or

- Includes wetland types that are difficult to restore or replace including vernal pools, fens, bogs and woodland seeps

ACEP WRE Land Eligibility – Adjacent Lands

Title 440 Programs Manual, Part 528 Agricultural Conservation Easement Program, Subpart K – WRE Application Process and Eligibility Requirements 528.105, I. Other Eligible Lands – Adjacent Lands (1), allows for the inclusion of adjacent lands in an ACEP WRE easement if they meet all of the following criteria:

(i) The adjacent lands will contribute significantly to the wetland functions and values or are incidental but necessary for the practical administration and management of the enrolled area.

(ii) (ii) The acres of adjacent lands must not exceed the acres of otherwise eligible land to be enrolled.

(iii) (iii) The adjacent lands are considered to be primarily upland buffer and associated areas but may also include riparian areas that do not meet the requirements of paragraph E of this section, restored nonagricultural wetlands, created wetlands, artificial wetlands, and noncropped natural wetlands

State Conservationist waivers of adjacent lands acreage amounts are also noted in document noted above after the adjacent lands criteria.

ACEP WRE enrollments frequently involvee the inclusion of some adjacent lands that meet the criteria noted above. Occasionally it may be necessary to have State Conservationist waivers granted for an additional percentage of adjacent land above the acreage amount of eligible land. These situations will meet the criteria outlined in the ACEP program manual Subpart K – WRE Application Process and Eligibility Requirements 528.105, I. Other Eligible Lands – Adjacent Lands (2) & (3). In (2) of the above referenced ACEP program manual section, the policy notes unique situations that may warrant a waiver including:

(i) Enrollment of unique or critical wetland complexes whose functions and values inherently depend on adjacent lands that do not meet one of the eligible land types. Examples of unique wetland complexes include, but are not limited to, pocosins, prairie potholes, playas, vernal pools, fens, bogs, and ridge and swale floodplain complexes.

(ii) (ii) Enrollment targeting at-risk wetland dependent species that require additional upland areas for successfully completing their life cycle.

(iii) (iii) Enrollment where the wetland acres could become degraded from agricultural activities on lands not in the enrolled area and additional upland buffers are needed for adequate protection of the wetland functions and values on the eligible lands acres.

(iv) (iv) Enrollment where the strict application of the ratio would create unmanageable boundaries, negatively impacting the practical administration or management of the enrolled area by NRCS.

(v) (v) Enrollment where the strict application of the ratio would leave areas of land remaining outside the enrolled area that would be impractical or cost prohibitive for the landowner

The unique situations noted above meet all presently identified potential situations in Vermont. Per the note in paragraph (3) of the above noted section of the ACEP Manual, the technical considerations and limitations applicable to a waiver to address the unique situations identified in paragraphs (2)(iv)-(v) will be described below in this WRCG but will not be broken out by wetland type and in general should not exceed the ratio of 2 to 1 (two adjacent land acres to one eligible land acre).

The Vermont-specific technical considerations and parameters used to make determinations related to the inclusion of any adjacent land are noted below. Riverine, Lacustrine, Slope, Mineral Flats, and Organic Flats HGM classes of wetlands all are wetland types that have the potential to meet eligible land criteria and be enrolled in ACEP WRE in Vermont. Adjacent lands typically enrolled with the above noted wetland types include uplands, wetlands that won't be hydrologically restored, and riparian areas that exceed the 300-foot riparian areas ACEP WRE width limitations. Important characteristics of these adjacent lands may include:

- Direct existing hydrologic connections with restorable wetlands and riparian areas.
- Will become hydrologically connected or impacted after wetlands restoration
- Connection of wildlife habitat for species dependent on uplands and wetlands for their life cycles
- Connection of wildlife habitat for species dependent on riparian areas for their life cycles
- Connection of fish habitat for species dependent on wetlands and riparian areas for their life cycles
- Connection to prior conserved lands
- Connection to wildlife crossings designated by the Vermont Fish and Wildlife Department
- Provide a buffer between human-impacted land and restorable wetlands and riparian areas. Including further separation from invasive plant species, roads, buildings, noise and light pollution
- Provide habitat for Federal or State Uncommon, Rare, Threatened, or Endangered Species
- Provide habitat for Species of Greatest Conservation Need as designated in the Vermont Wildlife Action Plan
- Provide for additional protects to surface or groundwater protection areas
- Provide additional water quality protection or pollution reduction

The inclusion of adjacent lands with the characteristics noted above contribute to the following wetland functions and values: storm and floodwater storage, water quality protection, fish habitat, wildlife habitat, habitat for uncommon, rare, threatened or endangered species, and erosion control.

Technical criteria used to determine the extents or proportions of adjacent lands acres for easement inclusion are:

- Visual, GIS, AutoCAD or engineering: reports, maps, or assessments that document hydrologic connectivity between restorable wetlands and adjacent lands
- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of adjacent lands is essential for targeted fish or wildlife species
- GIS data or maps identifying prior conserved lands, such as State Wildlife Management Areas, State Forest or Park lands, or lands protected by non-profit private land trusts
- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of adjacent lands is essential for habitat connectivity at local, state, and regional scales
- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of adjacent lands is essential for providing a buffer from human-impacted land
- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of adjacent lands is essential for providing habitat for Federal or State Uncommon, Rare, Threatened, or Endangered Species or Species of Greatest Conservation Need as designated in the Vermont Wildlife Action Plan
- Visual, GIS, AutoCAD or engineering: reports, maps, or assessments that document inclusion of adjacent lands is essential for the protection of surface or groundwater or to provide additional water quality protection or pollution reduction measures

The associated conditions under which a waiver to authorize the adjacent land acres to exceed the eligible land acres may be warranted for the different wetland types identified above when at least one of the technical criteria noted above supports such a waiver.

ACEP WRE policy sets an upper limit to the ratio of adjacent lands to eligible lands as not to exceed 5 to 1. (ACEP 2019). One adjacent lands technical criterion is required in Vermont to support a ratio of 2 to 1. Multiple adjacent lands technical criteria are required in Vermont to support ratios greater than 2 to 1 and ratios may not exceed 5 to 1. The higher the proportion of adjacent lands the more rigorous the technical determination to ensure the inclusion of such lands is appropriate and necessary to achieve program purposes. Requests to exceed the 5 to 1 ratio may be submitted by the State conservationist to the EPD director on an individual project basis or for specific wetland types in a designated area and must document the rationale for the request and be supported by the technical conditions and parameters described in the State-specific WRCG. (ACEP 2019)

ACEP WRE State Conservationist Riparian Areas Width Waivers

Vermont-specific criteria relating to State Conservationist riparian area width waivers notes that when special circumstances are met the State Conservationist may waive the 300 foot and combined on both banks 600-foot riparian areas width limitations. Circumstances where such a waiver is appropriate include:

- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of wider riparian areas is essential for targeted fish or wildlife species
- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of wider riparian areas is essential for habitat connectivity at local, state, and regional scales
- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of wider riparian areas is essential for providing a buffer from human-impacted land
- Wildlife or fish habitat GIS data, maps, models, reports, published studies, or professional judgment from a Wildlife Biologist that inclusion of wider riparian areas is essential for providing habitat for Federal or State Uncommon, Rare, Threatened, or Endangered Species or Species of Greatest Conservation Need as designated in the Vermont Wildlife Action Plan
- Visual, GIS, AutoCAD, Fluvial Geomorphic, or engineering: data, reports, maps, or assessments that document inclusion of wider riparian areas is essential for the protection of surface or groundwater or to provide additional water quality protection or pollution reduction measures

ACEP WRE Ranking and Threshold Scores

All ACEP WRE ranking is completed using the Conservation Assessment and Ranking Tool (CART) or any subsequent policy-directed tools. Highest ranked applications are considered for funding first unless funding levels or other program policy approved circumstances apply. No minimum threshold scores are planned at this time. They may be developed in the future as the CART becomes a better understood tool. This section of the WRCG would then be updated to reflect any minimum threshold scores which would need to be met in order to be eligible for funding an ACEP WRE project.

Easement Management and Maintenance

Easements will be managed according to their individual Wetland Reserve Plan of Operations. Easement monitoring will facilitate the identification of management and maintenance needs and proactive actions are encouraged to address anticipated management issues, including invasive plant or insect pest concerns. To the extent practicable, all easements will be managed to reduce

the presence of invasive plant species and maximize wildlife habitat for species identified in the WRPO.

Easement Monitoring

Easement monitoring is completed according to all ACEP WRE and NRCS Stewardship Lands monitoring policy and protocols. Onsite easement monitoring will include inventory and assessment of wetland restoration progress towards achieving WRPO objectives for soils, hydrology, vegetation, and wildlife habitat. Onsite monitoring also includes searching for illegal dumping and encroachment. Current NRCS easement monitoring policy will dictate how issues with wetlands restoration repairs or easement violations are handled.

Easement Compatible Use Authorizations

Easement compatible use authorizations are made in accordance with ACEP WRE policy. Typical compatible use authorizations in Vermont include:

- Installation and maintenance of acceptable structures such as wood duck boxes or hunting blinds
- Brush-hogging for pollinator or grassland bird habitat
- Brush-hogging or mowing to maintain trails
- Wildlife food plots
- Applying pest management activities

Technical considerations and parameters related to the authorization of compatible uses include:

- All acceptable structures need to meet ACEP WRE policy size restrictions and may not pose a flood hazard
- Semi-permanent hunting or observation blinds should be “rustic and customary” to region with size limitations dictated by the deed terms for the particular easement. Current easement program limits are not to exceed 80 sq. feet in size and 8 feet in height. The number, locations, and features of blinds must be approved by NRCS in a CUA. The installation footprint shall be minimized, and disturbed areas shall be revegetated with native vegetation. Blind shall be maintained and kept in good working order, and blend with the natural environment.
- Hunting or observation blinds that accommodate no more than four people and are temporary, nonpermanent, easily assembled and disassembled, and moved without heavy equipment must be moveable using existing trails or without negatively impacting the surface or vegetation. Depending on the specific easement deed terms, these may not require a CUA.
- Brush-hogging for pollinator or grassland bird habitat must meet ACEP WRE policy and specific restrictions to protect wildlife, including timing and frequency requirements. In Vermont the primary bird nesting season is April 15 through July 31. No brush-hogging

or mowing, other than for maintenance of previously established trails, is allowed during that timeframe
- Brush-hogging or mowing of trails should not exceed 12 feet in width for a trail unless specifically authorized in a compatible use authorization
- Wildlife food plots must meet ACEP WRE policy and planted species need NRCS approval to avoid introduction of non-native invasive plant species
- Pest management activities must meet ACEP WRE policy and must be completed according to all applicable Federal, State, and Local laws and regulations

Conservation Practices Eligible for ACEP WRE Funding

Conservation practices that could be included in ACEP WRE easement projects are noted below. This list is not all inclusive and any appropriate conservation practice or activity that is identified in a WRPO, restoration agreement, or Federal contract is acceptable for ACEP WRE easement restoration and management.

- Access Control (472)
- Aquatic Organism Passage (396)
- Brush Management (314)
- Critical Area Planting (342)
- Early Successional Habitat Development (647)
- Fence (382)
- Forest Stand Improvement (666)
- Herbaceous Weed Treatment (315)
- Mulching (484)
- Pest Management Conservation System (595)
- Phosphorus Removal System (782)
- Restoration of Rare or Declining Natural Communities (643)
- Riparian Forest Buffer (391)
- Stream Habitat Improvement and Management (395)
- Streambank & Shoreline Protection (580)
- Structure for Water Control (587)
- Structures for Wildlife (649)
- Tree/Shrub Establishment (612)
- Tree/Shrub Site Preparation (490)
- Upland Wildlife Habitat Management (645)
- Wetland Restoration (657)
- Wetland Wildlife Habitat Management (644)

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