North Carolina ACEP-WRE

2018 Farm Bill

Wetland Restoration Criteria and Guidance (WRCG)

The following narrative describes wetland types commonly enrolled and restored under ACEP-WRE in North Carolina:

Pocosin and Estuarine Systems on organic soils in the tide water region of eastern NC**.** The tide water region of NC has extensive ditch systems that have altered the hydrology on a large scale. The tidewater sites have been (drained) converted for crop and forest production. The average ground elevation in this region range from .5' to 20' above means sea level. The water level in these sites has been lowered to 3' to 10' below the surface by the installation of extensive canals/ditches. The tidewater area is very important habitat for migratory birds such as waterfowl, wading birds and shore birds. The target restored hydrology for these sites is at or above the surface during the winter and early spring. With a focus to have some permanent water during the growing season with aquatic vegetation. Target objectives in a restoration project would be mixed hardwoods with wetland vegetation in the understory and aquatic vegetation in the permanent water areas. The restoration sites are reforested with a diverse mix of hardwoods if restoration project began with a cropland site. If the existing site is in loblolly pine production, the goal would be to conduct a commercial thin on the stand to reduce the basil area (BA) to allow native hardwoods to re-establish. Some loblolly pines stands may need to be clear cut and reforested in hardwoods due to lack of hardwood regeneration and shrub competition. Some pine stands are thinned, then prescribed burning rotation would be used to create wet pine savannas that provide early successional habitat and biodiversity. This practice is used with the most actively and interested landowners. Common restoration practices and activities include but not limited to dike, ditch plug, farm path elevation, water control structure, slough excavation, tree planting, forest stand improvement, seeding native wetland vegetation, seed dikes in native warm season grass for upland and transition species.

Carolina Bays in the southern coastal plain with organic soils in the bay and non-hydric mineral soils on the rim (of the bay). The Carolina Bays have been ditched and drained for crop or forest production. These drainage systems have altered the water level from at or above the ground surface to several feet below the ground surface. These systems provide unique habitat with a diverse system of flora and fauna. There are many rare plants that exist on the fringe of the wetland upland interface. Carolina Bays provide valuable habitat for many migratory birds such as waterfowl, wading birds and shore birds. Long leaf pine savannas many times exist around the perimeter of the bay and provides habitat for the endangered Red Cockaded Woodpecker and potentially other rare species. In an undisturbed state you have open water, swamp forest transitioning into longleaf pine savanna. Target hydrology for the restoration is water level at ground level up to several feet deep year around. It is desirable to develop or manage the long leaf pine savanna around the perimeter (bay rim). The hydrology of the Carolina Bay systems are restored by installing water control structures, dikes, ditch plugs, elevated access roads,

slough excavation, tree planting, forest stand improvement, seeding native wetland vegetation, seeding dikes and roads with native warm season grasses for upland and transition species.

Swamp Forests on mineral hydric soils in the coastal plain**.** Swamp forest sites typically have been ditched and drained for crop and forest production. The drainage systems have altered the water level from within a few inches of the surface, a few inches above the ground surface varying to several feet below the surface. The swamp forest system in an undisturbed state would typically be hardwood forest with very small braided or first order stream heads. The target restoration hydrology for these sites would be to bring the water within a few inches of the surface or to the surface with some shallow permanent water areas. The restoration vegetation objective would be to establish mixed hardwoods with native wetland vegetation in the understory. The permanent water areas would have native aquatic vegetation. These sites provide valuable habitat for migratory birds such as waterfowl, wading birds and forest land birds. The swamp forests provide valuable habitat for amphibians, reptiles and terrestrial species. The practices or activities used to restore these sites would typically be dike, ditch plug, water control structures, stream channel restoration, wetland cell excavation, access road elevation, hardwood tree planting, seeding native wetland vegetation, native warm season grass establishment on dikes and roads. For the tracts that are in loblolly pine production commercial thinning may be used to reduce the BA and allow for natural hardwood regeneration.
Some stands may be burned to create wet pine savannas. Other stands must be clear cut if hardwood regeneration is absent and replanted in hardwood seedlings. For sites that are in crop production mixed hardwoods are planted.

Riverian Flood Plain Hardwood Forest on mineral hydric soil located in the coastal plain, piedmont, or mountains. Typically these areas have been ditched and drained for crop and forest production. The drainage system has altered the water level from near the surface to several feet below the surface with reduced flooding conditions during wet periods. These sites in their pre-existing condition would be wet hardwood stands along rivers and streams with varying macro topography. The target hydrology for these sites would be to establish water levels within a few inches of the surface to water levels on the surface with some shallow permanent water areas. The vegetation would be mixed hardwoods with native wetland vegetation in the understory. The permanent water areas would have native aquatic vegetation. These sites provide valuable habitat for migratory birds such as waterfowl, wading birds and forest land birds. These forests provide valuable habitat for amphibians, reptiles and terrestrial species. The practices and activities used to restore these sites would typically be dike, ditch plug, water control structures, stream channel restoration, wetland cell excavation, access road elevation, hardwood tree planting, seeding native wetland vegetation, native warm season grass on dikes and roads. For the tracts that are in loblolly pine production commercial thinning may be used to reduce the BA and allow for natural hardwood regeneration. Some stands are burned to create wet pine savannas. Other stands must be clear cut if hardwood regeneration is absent and replanted in hardwood seedlings. For sites that are in crop production mixed hardwoods are planted.

Mountain Bog in North Carolina are mountain wetlands found in relatively flat spaces at the base of slopes, where long-term soil saturation makes an ideal situation for a range of wetland plants, many of them unique non-woody plants. Bogs are typically small and many may be an acre or less. The thick deposits of organic soils allow endangered plants like mountain sweet pitcher plant, green pitcher plant, swamp pink, and bunched arrowhead to grow, as well as unique wildlife like the endangered bog turtle. Bogs also support extensive mats of sphagnum moss, in accumulations not found in other natural landscapes. Walking in a bog feels like walking or bouncing on a wet sponge. These sites have been drained for pasture and crop production. The drainage has lowered the water level from at or near the soil surface to several feet below the soil surface. The target hydrology would be to reestablish the water levels at or near the surface. The target restoration vegetation would be native non-woody plants. Some of the practices or activities used to restore the site are ditch plug, water control structures, culverts, fencing, native wetland vegetation, native warm season grass buffer. Managed grazing is used on many sites in order to control the woody vegetation on these sites if recommended by USFWS in management plan for bog turtles.

Alternative Wetlands, CUA, Technical Considerations for Waivers:

Pocosin and Estuarine

North Carolina (NC) would like to create some open water areas in these systems to provide habitat for waterfowl, wading birds and shore birds. NC NRCS staff along with USFWS do not feel that these open water areas are alternate wetlands but would exist in the natural system before the disturbance of man. These open water areas may be used as food plot areas under CUA's. Food plots in CUA don't exceed 5% of the easement area. NC staff are working with partners to restore the natural drainage patterns of these areas during restoration. The NC Coastal Federation and North Carolina State University Biological and Agricultural Engineering (BAE) have assisted in the past to develop areas where the natural drainage water is pumped into the WRE/WRP easement area and then water is allowed to follow through the natural drainage area to the river or sound. Pumps were purchased by partners such as NC Clean Water Management Trust Fund (CWMTF) and maintained by the drainage association or landowner. The wetland restoration is not dependent on the pumps to be successful. These areas do have higher restoration cost due to the extensive drainage systems that are in place and the deep organic soils that NRCS must deal with during restoration activities. The increased cost for restoration does not create a long-term operation and maintenance cost burden to the program. These restoration projects are very successful once completed, they restore valuable migratory bird, black bear, deer, and amphibian habitat along with improved water quality in the estuary located with close proximity.

Carolina Bays

These areas do have higher restoration cost due to the extensive drainage systems that are in place and the deep organic soils that NRCS must consider during restoration design and installation. The increased cost for restoration does not create a long-term operation and maintenance cost burden to the program. These restoration projects are very successful once completed, they restore valuable migratory bird, black bear, deer, and amphibian habitat.

Swamp Forest and Riverian Floodplain Forest

These areas do have higher restoration cost due the extensive drainage systems that are in place and the expense of stream restoration in North Carolina. The increased cost for restoration does not create a long-term operation and maintenance cost burden to the program. These restoration projects are very successful once completed. These restorations improve valuable migratory bird, black bear, deer, and amphibian habitat.

All CUA's must be recommended in a wildlife habitat management plan prepared by NRCS Biologist, USFWS Biologist, or NCWRC Biologist to improve wildlife habitat on the easement area.

NC has selected several priority areas around the USFWS refuge system. In addition, NC has a sentinel landscape project area to support the Department of Defense (DOD) mission in eastern NC. WRE/WRP easements are providing valuable protection to this mission. The military mission is a very high priority in North Carolina.

NC in consultation with the state tech committee has elected to focus on permanent easements with the limited funds that are received to maximize the environmental benefit of land protection.