WETLAND PROTECTION PLAN FOR PROPOSED AGRICULTURAL LANDS

Part A. Wetland Identification and Buffer Recommendations

CUYAHOGA VALLEY NATIONAL PARK
NATIONAL PARK SERVICE
U.S. DEPARTMENT OF THE INTERIOR

February 13, 2002

Recommended:

_____ _____

Superintendent Date
Cuyahoga Valley NP

Approved:

_____ _____

Regional Director Date
Midwest Region

Introduction

Wetlands are associated with many areas that are considered ideal for agriculture in Cuyahoga Valley National Park (CVNP). These areas are often mowed to maintain the appearance of agriculture or put into active agricultural use under various leasing authorities. This 3-part plan outlines the specific procedure for protecting wetlands from potential impacts by agricultural use or mowing. This document, *Part A. Wetland Identification and Buffer Recommendations* describes the review process for locating potential wetland areas, wetland delineation procedures, and the methodology for determining appropriate buffer zones. A second document, *Part B. Wetland Monitoring* will contain the specific long-term monitoring protocols that will be used to assess the effectiveness of established wetland buffers. Additionally, all specific wetland assessments and buffer recommendation reports will be compiled as they are developed into *Part C. Field Reports and Recommendations.*

Status and Importance of Wetlands

Wetland habitats in Ohio declined in area by 90% between the 1780s and 1980s (Noss and Peters 1995). Most of these losses can be attributed to draining and filling for agricultural use. Development and urban sprawl continually threaten the wetlands that remain in northeastern Ohio.

Healthy wetlands provide many benefits (Mitsch and Gosselink 1993). It is well established that water quality is improved as wetland areas filter out nutrient loads and pollutants before they reach rivers and streams. Wetlands moderate floodwaters and maintain low water flows. Wetlands provide habitat for a diversity of plants and wildlife, many of which are becoming increasingly scarce both locally and regionally due to continuing wetland losses. Wetlands can also serve as important stopover areas for migrating birds. In addition to their ecological significance, wetlands exhibit a variety of educational, recreational and aesthetic values.

It is important to note that while it is relatively clear how large wetland complexes provide these benefits, small isolated wetlands can be considered just as crucial for maintaining regional biodiversity, as their biological significance has recently become more apparent (Dodd and Cade 1997; Semlitsch and Bodie 1998, Snodgrass, et al. 2000).

CVNP is a National Park unit encompassing over 33,000 acres of relatively undeveloped land along 20 miles of the Cuyahoga River between the metropolitan areas of Cleveland and Akron, Ohio. Results from a park-wide wetland inventory indicate that more than 1200 wetland areas encompassing approximately 1700 acres exist in CVNP (Davey Resource Group 2001). Most of the wetlands are quite small, with only 190 greater than an acre in size and only 35 greater than 10 acres in size. Wetland types found in the park include marshes, wet meadows, scrub/shrub wetlands and forested wetlands.

CVNP wetlands are not only valuable park resources, but are now of greater significance at a regional scale. Considering that almost half of Ohio's remaining wetlands may be isolated (Kim Baker, Ohio Department of Natural Resources, pers. comm. 2001) and recent Supreme Court rulings have ended Army Corps of Engineer jurisdiction over such

wetlands, the loss and degradation of remaining wetlands outside the park will undoubtedly continue and may increase.

Wetland Protection Guidelines and Regulations

NPS Management Policies (NPS 2001, Section 4.6.5) and Executive Order 11990 "Protection of Wetlands" direct the NPS to minimize and mitigate the destruction, loss or degradation of wetlands; preserve, enhance and restore the natural and beneficial values of wetlands; and avoid direct and indirect support of new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize harm to wetlands. NPS policies for implementing the Executive Order 11990 in CVNP are found in Director's Order 77-1 "Wetland Protection" and the associated Procedural Manual.

The NPS has set a goal of 'no net loss of wetlands' and requires that parks avoid adverse impacts to wetlands to the extent practicable for any new development or projects. The objectives outlined in the park's Resources Management Plan (NPS 1999) reflect these wetland protection mandates.

The most effective means of stemming the loss and degradation of wetlands is to avoid and minimize impacts of development from the outset (Shisler et al. 1987). The primary objective of this plan is to avoid direct and indirect negative impacts to wetlands by:

1) Prohibiting any agricultural activity or mowing in wetlands; and
2) Establishing effective buffer areas between planned agricultural or mowing activities and wetland areas.

Wetland Protection Protocol

To assess the potential for wetland impacts, a simple protocol was established (Figure 1). A *wetland identification* process determines whether wetlands are associated with areas to be mowed or put into active agricultural use. If wetlands are not present in a proposed area, then it is obvious that no impacts are expected. If wetlands are associated with a proposed area, then the potential for direct or indirect impacts must be assessed.

A *wetland quality assessment* is conducted and then initial *wetland buffer recommendations* are assigned. If direct encroachment into wetland areas can easily be avoided, then no potential for direct impacts exists. In almost all cases, the park will explicitly avoid direct impacts to wetlands. If effective buffer zones that protect the wetland values and functions can be established, then no potential indirect impacts are expected. After initial buffer recommendations are set, *buffer zone adjustments* may be made and methods for *monitoring buffer effectiveness* are established.

If through this screening process, it is uncertain whether direct or indirect impacts can be expected, or the NPS, after determining that no practicable alternative exists, decides to expressly permit some level of adverse impact to wetlands or their buffers to increase the utility or cultural resource value of a structure or area, additional actions are required. Consultation with the NPS Water Resources Division will be initiated and the NPS will

implement the appropriate environmental compliance and documentation procedures as required under NEPA and Director's Order 77-1 (Wetland Protection) to examine site-specific impacts. The NPS will seek to minimize impacts and mitigate any unavoidable impacts.

Wetland Identification

Parcels proposed for mowing or agricultural use are reviewed by Resources Management staff (RM) to identify potential wetland issues. All existing information is reviewed including GIS data layers, the 2001 park wetland inventory, National Wetland Inventory, Ohio Wetland Inventory, county soil surveys, and hydrology. Field visits are conducted to confirm initial findings and identify other potential wetland areas through observation of vegetation and hydrology. Any areas that have documented wetlands or wetland indicators in the proposed use area or within approximately 250 feet of the edge of the proposed use area are referred to a qualified wetland specialist for assessment.

The wetland specialist then conducts a wetland determination for the identified areas. This determination includes marking and mapping the boundaries of any wetlands and reporting on wetland size and quality, characteristic vegetation, and hydrology. Information generated will conform to the Procedural Manual 77-1 guidelines. Some detailed information collection performed in formal wetland delineations (e.g., paired sampling along boundaries) will be abbreviated, as such high accuracy is not critical for buffer zone establishment. All wetlands identified on or near proposed agricultural areas undergo further review for buffer recommendations.

Importance of Wetland Buffers

Wetland buffers are vegetated upland areas along wetland borders that reduce the adverse impacts to wetland values and functions from adjacent land use. An excellent overview and literature review of the roles of wetland buffers and effective buffer sizes is available (Castelle et al. 1992). Buffers protect wetlands by moderating the effects of storm water runoff by stabilizing soils, filtering harmful substances, reducing sedimentation and nutrient input, and moderating water level fluctuations. Forested buffers shade waters thereby moderating temperatures and oxygen levels for aquatic wildlife.

Buffers also provide essential wildlife habitat for feeding, roosting, and breeding. Buffer areas afford cover for safety and thermal protection. For example, many waterfowl species feed in wetlands but build their nests on adjacent dry land to avoid flooding nests. Some bird species, such as the wood duck (*Aix sponsa*) and pileated woodpecker (*Drycopus pileatus*) require large dead trees in wetland margins for nesting. Many amphibians spend only a small portion of the year in wetland areas, dwelling in terrestrial habitats adjacent to ponds and wetlands during other seasons.

Wetland Buffer Sizes

Buffer size recommendations will vary depending upon wetland function and value. A general summary of the values affected by a variety of buffer sizes is found in Table 1. Buffers less than 50 feet are generally ineffective or minimally effective in protecting

wetlands (Castelle et al. 1992). Therefore, buffers smaller than 50 feet should be assigned only to very small low quality man-made wetlands (e.g., roadside ditches, tire-rut wetlands). Buffers designed to maintain water quality are generally on the order of 100 feet (Castelle et al. 1992).

However, buffers designed for habitat protection goals are generally larger depending on the specific fauna involved. Narrow buffers in areas naturally rich in wildlife can act as ecological traps by increasing predation risks and reducing reproductive rates, possibly leading to population declines and localized extinctions. Nesting waterfowl generally require buffers of 100 feet or more to maintain diversity and abundance (Castelle et al. 1992). Some pond-breeding salamanders found in CVNP (*Ambystoma* spp.) can require terrestrial buffers of several hundred feet from wetlands for adequate protection (Semlitsch 1997). An approach that considers all of these buffer values is appropriate in a national park setting.

Wetland Quality Assessment

An assessment of the specific wetland functions and values for each wetland area is needed to establish appropriate protective buffer zones. Rather than study each wetland area in depth, CVNP has adopted a robust rapid assessment technique. The Ohio Rapid Assessment Method for Wetlands (ORAM) is used by the Ohio EPA as guidance for assessing wetland quality and landscape context (Mack 2001). This is an adaptation of a wetland assessment technique established by the State of Washington (Washington State Dept. of Ecology, 1993).

The ORAM scores wetlands based on a number of wetland characteristics including: presence of threatened/endangered species, exotic species, total area, vegetation classes and structure, plant diversity, special habitat functions (e.g., beaver, heron (*Ardea herodias*) rookeries), hydrological connections and corridors, existing buffers, and adjacent land uses. Assessments of wetland quality include both office and field ratings. Office ratings use information gathered during the delineation and other data. Field ratings include assessing many qualitative and quantitative wetland characteristics in a simple, straightforward manner.

The ORAM uses a standardized scoring system that classifies wetlands into 3 quality categories: 1-Very Low, 2-Moderate, and 3-Very High. Current ORAM scoring calibration results in a split of the moderate category into two levels (Mack 2000). An adaptation of this methodology will be used to rate CVNP wetland quality (See Table 2 for CVNP-specific modifications). Initial category assignments provide a starting point for prescribing effective buffer zones. Most wetlands associated with agricultural lands in CVNP are expected to fall into Category 1 or 2(a,b) wetlands.

Standard Buffer Recommendation

Wetland buffer recommendations are prescribed based on wetland quality. Generally, sensitive or unique wetland areas would require larger buffers and low quality areas would require less. Wetland buffers in CVNP will be established from a minimum of 25

feet to 200 feet or more. The following initial buffer categories based on wetland quality are:

Wetland Category	Buffer Size
1 (Very Low Quality)	25' – 50'
2a (Moderate Quality)	50' – 125'
2b (Moderate Quality)	125' – 200'
3 (Very High Quality)	200'+

This range includes distances similar to those established by some states that have adopted wetland buffer zone standards (Castelle et al. 1992). Only tiny tire-rut and roadside ditch wetlands would receive buffers less than 50 feet. Buffers of 50 feet are recommended for all other low quality wetlands. Buffer sizes then increase with increasing wetland quality. These increases track closely with the scope of wetland functions requiring protection.

Buffer Zone Adjustments: Managed Zones

Much of the scientific literature assessing the adequacy of buffers for protecting against agricultural impacts is based on research on traditional agricultural practices. Using these recommendations can therefore be considered conservative and sufficiently protective in respect to more sustainable practices. Less intensive sustainable and organic farming practices may justify less restrictive wetland buffers. Indeed, the actual use of buffer areas for certain agricultural activities may be allowable where such activity has been shown to enhance buffer zone quality or not adversely impact wetlands. For example, prescribed grazing practices may enhance wetland values by controlling exotics and increasing habitat for rare species in some situations (e.g., Tesauro 2001).

Therefore, sustainable practices such as grazing, haying or mowing may be allowed in the buffer area that extends beyond 150 feet provided that only no-till seeding, appropriate rotational grazing practices, and no fertilizing occurs in this zone. No "Managed Zone" will be assigned for wetlands with buffers equal to or less than 150 feet. Documented scientific research justifying agricultural uses of buffer areas would be required before any such program is considered. Review by the NPS Water Resources Division will be required for all buffer zone uses. Additional environmental compliance activities, mitigation and monitoring may be required in many cases.

Other Buffer Zone Adjustments

NPS wetland protection guidelines also promote restoring and enhancing wetland quality and value whenever practicable. Therefore, the current quality of a wetland is only one consideration when determining buffer needs. If wetland quality can easily be improved with restoration or removal of invasive species, then such a wetland should be afforded additional protection. As such, wetlands are qualitatively assessed for restoration potential during the wetland quality assessment field visits. Considerations include current quality, accessibility, presence, extent and type of exotics, presence of man-made impediments, connectivity to other wetlands, and aesthetic value. A high restoration potential may justify raising the initial buffer recommendation.

Additionally, NPS policies do not always require the preservation of 'artificial' wetlands (i.e., incidental or intentional wetlands associated with human activity on upland areas). However, if it is determined that such a wetland now exhibits the characteristics of a natural area, additional protection may be warranted. The wetland quality assessment will contribute to this determination.

Initial buffer recommendations will be made using the best information currently available. These recommendations are certainly subject to revision should new information (e.g., presence of rare, threatened or endangered species, observed wetland impacts) become available. Additionally, wetland boundaries may expand naturally over time and as such the actual buffer areas may require realignment. Natural wetland changes that increase wetland area will be permitted to occur unimpeded (as the natural meandering of the Cuyahoga River) unless they threaten critical park resources (e.g., buildings, railroad, and Towpath Trail).

Monitoring Buffer Effectiveness

As much of the focus of this plan is to avoid indirect impacts to wetlands through the use of buffer areas, monitoring protocols will be set in place to ensure that the buffer areas are indeed performing their function. Using generally conservative buffer recommendations does not dismiss our responsibility for monitoring buffer effectiveness. Ineffective buffers would be redesigned using an adaptive management approach.

A comprehensive wetland monitoring program is currently in development. Monitoring activities will be outlined in *Part B. Wetland Monitoring* of this plan as they are established. Baseline monitoring data will be collected before farming activity begins whenever possible and will then be reassessed periodically to assess changes and trends.

Some basic monitoring efforts will overlap with established park monitoring techniques. For example, established frog call surveys and water quality monitoring efforts will be expanded to include water resources associated with new farm areas. Additionally, wetland vegetation monitoring involving quantitative assessments of exotic species and cover board readings to document changes in vegetation in wetland margins will be implemented. Buffer zone photo documentation along the length of wetland buffer/farm field boundary will provide lasting visual records.

Other more robust and sensitive wetland monitoring tools are being investigated for use in the park (e.g., Danielson 1998, Rader et al. 2001). An ecological inventory of park wetland characteristics and review of available methods will help identify appropriate ecological indicators for wetlands in CVNP.

Conclusion and Overview

Briefly, the procedure for identifying wetlands and developing buffer recommendations as outlined in this document includes these steps:

1) *Potential areas for mow or agricultural use* are identified and submitted to RM by the Technical Assistance and Professional Services division (TAPS) for review. TAPS provides GIS data for all proposed use areas and tracts.

2) A *preliminary review of existing data* and reports is conducted including soil surveys, National Wetland Inventory data, the 2001 park-wide wetland inventory and other information resources to identify potential wetland areas.

3) RM staff performs *on-site investigations* to verify the preliminary review and identify other potential wetland areas. The need for additional wetland consultation is determined.

4) A *field determination* or delineation by a qualified wetland specialist is performed for potential wetland areas. This technical procedure is managed through TAPS and may be performed by contractors or other governmental agencies (e.g., Army Corps of Engineers). Wetland boundaries within 250 ft. of proposed farm fields will be delineated and described. RM will help review contract specifications and clarify initial RM concerns with wetland specialists.

5) A *wetland quality assessment* to score wetlands on quality and provide baseline information for buffer recommendations is performed by RM staff using an adaptation of the Ohio Rapid Assessment Method. These assessments are performed April-October when the ORAM is most reliable.

6) RM staff provide *standard buffer recommendations*. Ideally, buffers should be prescribed before lands are offered for use. These recommendations should be incorporated into all agricultural use documents including Requests for Proposals, agricultural leases and Special Use Permits.

7) *Buffer zone managed areas and adjustments* are prescribed based on site-specific resource issues, restoration potential, and proposed agricultural land use.

8) *Monitoring efforts* are established to assess buffer effectiveness and recommend additional buffer zone adjustments should original buffers prove less than adequate.

A second document in development, *Part B. Wetland Monitoring* will contain the specific long-term monitoring protocols that will be used to assess the effectiveness of established wetland buffers. All specific wetland assessments and buffer recommendation reports will be compiled as they are developed into *Part C. Field Reports and Recommendations.*

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Table 1. The responses of wetland values and functions to various buffer sizes.

Buffer Size (feet)	Responses of Wetland Values and Functions
300+	Waterfowl breeding/feeding retained [1] Heron feeding maintained [1] Amphibian populations retained [3] Diversity of mammals maintained (e.g., beaver, muskrat) [1] Cavity nesting duck habitat protected [1] Bird diversity maintained [1]
200-300	Waterfowl breeding, but reduced diversity [1] Reduced mammal diversity, but beaver remain [1] Most sediment removed [1]
100-200	Waterfowl breeding, but reduced populations and diversity [1] Adequate sediment removal (75-80%) [1] Most nutrients filtered [1] Reduced salamander diversity [3] Decreased turtle abundance [2]
50 - 100	Loss of many wetland bird species (e.g., belted kingfisher) [1] Songbird diversity maintained in forested buffers [1]
<50	Generally ineffective in preserving major wetland functions [1] Human activities disturb breeding/feeding birds [1] Degradation of buffer habitats over time more likely [1]

Sources: [1] Literature review by Castelle et al. 1992, [2] Burke and Gibbons 1995, [3] Semlisch 1997

Note: Specific research results were generalized into the above categories for ease of interpretation.

Figure 1. Wetland protection protocol for agricultural lands.

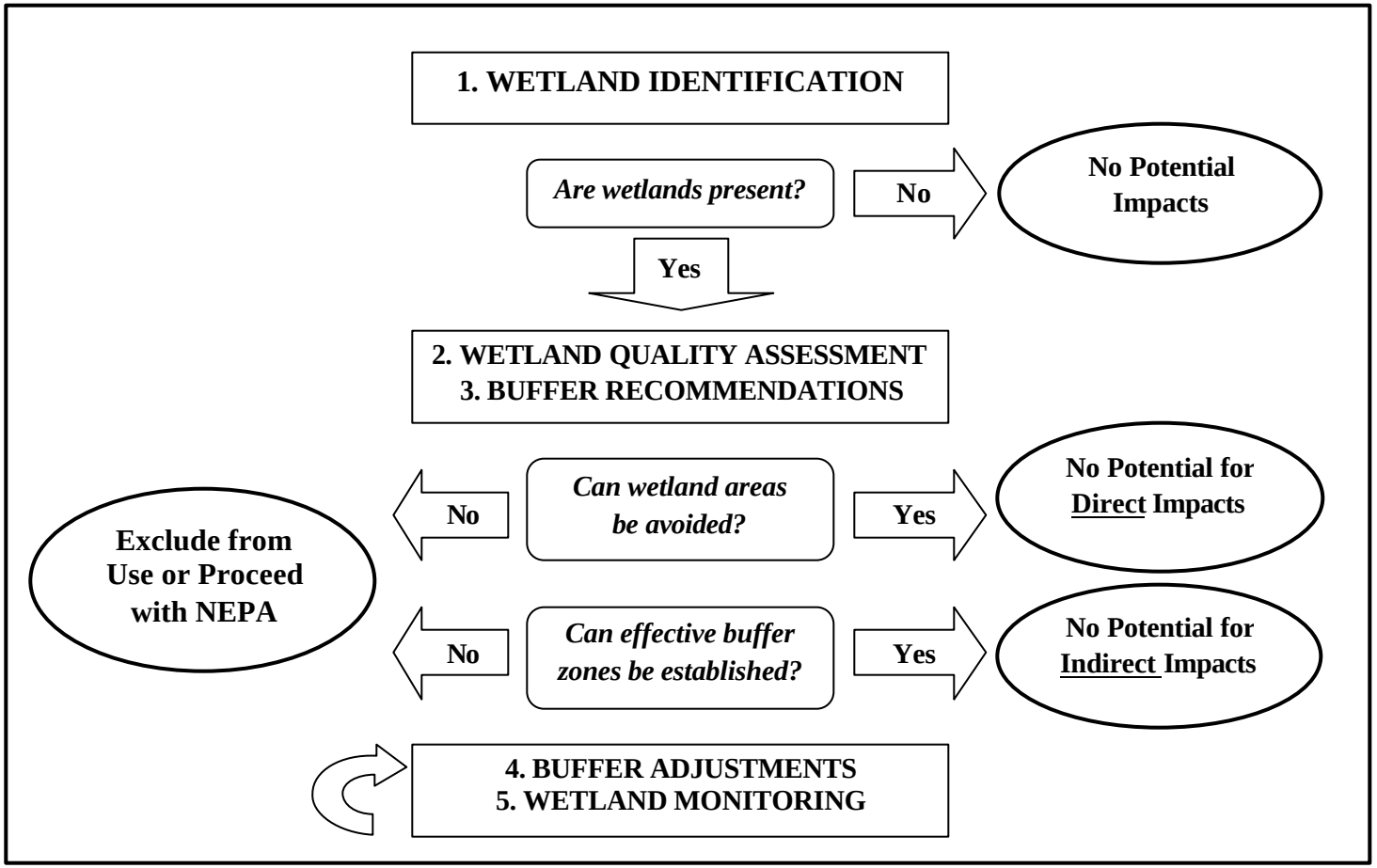

Table 2. CVNP modifications to the Ohio Rapid Assessment Method for Wetlands (see Appendix 1 for the ORAM procedure).

1. Narrative rating: Most narrative ratings will be conducted primarily with data already available at CVNP as RM maintains most of this information. The park staff is usually better informed regarding the existence of endangered and threatened species, etc. Consultations with the Ohio Department of Natural Resources, other agencies, or researchers will be conducted when deemed appropriate.
2. 100-year floodplain determination: The USGS 100-year flood map (1983) will be used to assess this item.
3. Total wetland area calculations: Large wetlands will not always be mapped in their entirety (i.e., only wetland areas within 50m (164 feet) of farmed fields may be dilineated). Other data sources (wetland inventory, NWI, or aerial photos) will be used to estimate total wetland size when necessary. Wetlands that exist in their entirety beyond 50m of farmed fields will be assessed in this fashion to identify Category 2b or 3 wetlands requiring buffers greater than 50m.
4. Wetland category determinations: The current ORAM scoring breakpoints (Mack 2000) will be used. When new calibrations become available, they will be adopted. Wetlands falling in the two 'gray zones' will be reviewed in greater detail before assigning a category. Wetlands scored on an older ORAM version will retain their classification and not require rescoring.

Scores between:	Category
0 - 29.9	1
30 - 34.9	(1 or 2a: review further)
35-44.9	2a
45-59.9	2b
60-64.9	(2b or 3: review further)
65 - 100	3

5. Assessment forms: A slightly modified front data sheet for CVNP ORAM scoring is attached as Appendix 2 for tracking park-specific information.
6. ORAM revisions: Future revisions to the ORAM may be considered for use in CVNP as they become available. Specifics on how any changes will be incorporated will be appended to this plan.

Appendix 2. Wetland Quality Assessment Form, Cuyahoga Valley NP

Tract Name:_____ Tract Number:_____

CCC Field ID# (if applicable):_____

Wetland Type (Cowardin et. al 1979):

Location of wetland (short description):

Wetland Size (acres): _____
How was size estimated?

Sources of Information (check all that apply):

Site Visit (date)	_____	Soil Survey Map	_____
Delineation Report	_____	Wetland Inventory	_____
NWI Maps	_____	OWI Map	_____
USGS Topo	_____	Aerial Photo	_____
RM Data	_____		

Site Specific RM Issues (encroachment/threats, uniqueness, special habitat values):

Reviewer:_____ Date Reviewed_____

Final Score:_____ Provisional Wetland Category:_____