USER NOTES - MUNCIE NE, INDIANA
NATIONAL WETLAND INVENTORY MAPS

MAP PREPARATION

This map provides wetland delineation and classification for the area covered by the Muncie NE 1:100,000 scale topographic map published by the United States Geological Survey (USGS). Delineations were produced through stereo photointerpretation of high altitude color infrared photography at a scale of 1:58,000. The delineations were then photographically enlarged to 1:24,000 scale corresponding to the 7.5 minute topographic quads published by the USGS.

The map was prepared primarily from aerial photography taken in November 1980 and May 1981 with a few areas covered by November 1981 photography. The user should note that the wetland delineations typically reflect conditions at the time of photography, and that changes in landscape or land-use may have occured since this time, introducing a certain margin or error. In addition, extremely small wetlands, those covered by dense forest canopies, and other wetlands not recognizable to the photointerpreter may not have been included on the maps. Therefore, a detailed, site specific analysis may indicate revision of the wetland boundary established by the interpreter, or the addition or deletion of any not correctly identified. Any discrepancies noted by the user should be brought to the attention of the Regional Coordinator, Region 3, U.S. Fish & Wildlife Service, Federal Building, Ft. Snelling (AS/BSP), Twin Cities, MN 55111.

GEOGRAPHY

The Muncie NE work-area is located in East Central Indiana from 85° West longitude approximately 10 miles to the Ohio State line and between 40.5° - 41° North latitude. Larger towns in the area include Decatur and Berne.

Bailey's Ecoregion Classification (1980) places the area in the Eastern Deciduous Forest Province, specifically the Beech-Maple Division. The topography consists of flat to gently rolling hills ranging in elevation from about 600 to 1,200 feet. Farming is intensive, with the hardwood forest occuring primarily in the form of well dispersed farm woodlots and as riparian communities along the rivers and creeks.

Precipitation averages about 35-60 inches per year, with greatest rainfall during the summer months. Wettest ground conditions actually occur during the spring due to snow-melt and run-off. The average annual temperature ranges from about 40°F to 60°F.

Several physiographic subdivisions occur across the work-area. Nearly level upland (glacial) till plains occur primarily to the west. Surface drainage is poorly defined, although excess water is removed from the soils by an extensive network of open ditches and subsurface drains.

Several glacial moraines cross the area, characterized by rolling knobs, ridges, and depressions. These may also have poor natural drainage. Depressions and "potholes" may be particularly hard to artifically drain, and although a number were originally pumped dry, many have been allowed to return to natural marsh.

Outwash terraces occur along several of the larger rivers. Most of the outwash soils are fairly well drained, although old river sloughs and depressions generally retain water periodically. Other of these soils may be poorly drained as a result of a rapid recharge rate from the surrounding areas. Limestone terraces occur in places along the Mississinewa River. Nearly level to gently sloping, with sharp breaks between terrace levels, the associated soils are generally shallow and well drained. Artificial drainage through these areas is difficult because of the shallow depth to bedrock.

Bottomlands occur along most of the rivers. Larger, wider bottoms are generally well drained, while narrower ones usually retain water over a longer period of time. These smaller bottoms are many times artifically drained.

Soil types in the region range from sands, sandy loams, and calcareous loams to clays, silty clays, and gravels.

UPLAND VEGETATION

Winter/temperate deciduous forest is characteristic of the work-area. This is dominated by tall broad-leaf trees that provide a dense canopy in summer but shed their leaves completely in winter. Lower layers of small trees and shrubs develop weakly. In spring a thick, low layer of herbaceous plants quickly develops, but this is greatly reduced after the forest trees reach full foilage and shade the ground. Common trees are oak (*Quercus* sp.), beech (*Fagus* sp.), maple (*Acer* sp.), birch (*Betula* sp.), hickory (*Carya* sp.), walnut (*Juglans* sp.), basswood (*Tilia* sp.), elm (*Ulmus* sp.), ash (*Fraxinus* sp.), tuliptree (*Liriodendron Tulipifera*), sweet chestnut (*Castanea* sp.), and hornbeam (*Ostrya* sp.). Where forests have been cleared by logging pines develop readily as second-growth vegetation.

WETLAND ECOSYSTEMS

Palustrine

Several types of palustrine systems are present in the work-area. These include small ponds (less than 20 acres), river sloughs and oxbows, farmed and non-farmed depressions and potholes, and marsh areas, open or vegetated. All wetland vegetation associated with these systems is considered Palustrine, as is the wetland vegetation associated with Riverine and Lacustrine systems (discussed below).

Cattails (*Typha* sp.) and smartweed (*Polyonum* sp.) are the dominant emergent species in most systems, although Purple Loosestrife (*Lythrum salicaria*), Horsetail (*Equisetum* sp.), Spikerush (*Eleocharis* sp.), Rush (*Juncus* sp.), Sedge (*Carex* sp.), and Bulrush (*Scirpus* sp.) are all common. An interesting orange parasitic vine, Smartweed dodder (*Cuscuta Polygonorum*) is observed in many wetland areas growing in large masses on *Polygonum*.

Aquatic bed vegetation occurs frequently in the area, dominated by Duckweed (*Lemna* sp.), Water-lily (*Nuphar* sp.), and Water Primrose-willow (*Jussiaea repens*). Buttonbush (*Cephalanthus occidentalis*) and Black willow (*Salix nigra*) generally dominate as scrub-shrub species, although many of the forest tree species listed below may also be classified as scrub-shrub when young. Dominant wetland forest species include Elm (*Ulmus* sp.), Black willow, Sycamore (*Platinus occidentalis*), Cottonwood (*Populus deltoides*), Alder (*Alnus* sp.), Ash (*Fraxinus* sp.), Boxelder (*Acer negundo*), Red Maple (*Acer rubrum*), and Silver Maple (*Acer saccharinum*).

Small ponds (less than 20 acres) either natural, excavated, or impounded are generally considered to be intermittently exposed (more or less permanently flooded) Unconsolidated Bottom. Extremely small (1 or 2 acre) ponds, or those showing emergent growth toward their centers are classified semi-permanently flooded, Unconsolidated Bottom.

Occasional ponds that appear shallower, or are shown as intermittent on tne USGS topographic quads, are classified as seasonally flooded Unconsolidated Shore. Wetland vegetation associated with these ponds is considered Palustrine as well, and way be Emergent, Scrub-Shrub, Forest, or Aquatic Bed.

Oxbows and old river sloughs are common along the major streams in the area. These Palustrine sytems may be classified as either Unconsolidated Bottom or Unconsolidated Shore according to their apparent permanence or periodicity of flooding, or may be classified by vegetation (usually Emergent) if applicable.

Depressions and potholes occur throughout the work-area, and are generally flooded either temporarily, seasonally, or/ semi-permanently. These depressions are delineated primarily if a clear edge is visible on the photography, a topographic low is indicated on the USGS quad sheet, and a hydric soil type is indicated by the SCS Soil Survey. A large number are regularly drained for crop production. If the farmed depressions are clear of wetland vegetation and show signs of regular farming, it is assumed they are only temporarily flooded, and either dry naturally or are drained. They are classified as Palustrine Emergent, however, implying that wetland vegetation would appear quickly if tne depressions were not plowed. If wetland vegetation is observed in the depressions, they are assumed to be too wet to regularly plow (although they may be farmed occasionally) and are classified as seasonally flooded Emergent. Semi-permanently flooded depressions are easily distinguished from surrounding agricultural land by a thick growth of emergent or other wetland vegetation.

These depressions may also occur on non-farmed land and are observed frequently in farm woodlots - many woodlots are left standing over areas that are too wet to farm. These non-farmed depressions are considered temporarily, seasonally or semi-permanently flooded and are classified as Emergent, Scrub-Shrub, or Forested as appropriate.

A number of larger natural marshes occur in the area. Many remain in a natural state while many are drained and/or farmed. These are generally classified in a similar manner to the depressions as outlined above.

Riverine

A number of large riverine systems are present in the Muncie NE area. These larger rivers include the Wabash and St. Mary's. They are classified as permanent Upper Perennial Unconsolidated Bottom along most of their lengths, although certain segments maybe classified as semi-permanently flooded in areas where modification to the stream channel have altered the river flow. Exposed bars and outwashes along these main streams are classified as Unconsolidated Shore, seasonally flooded by spring snowmelt.

Numerous smaller creeks and streams, many of which have been modified and straightened comprise the natural draingage of the area. These are delineated only if classified as perennial by the USGS topographic quads and are approximately 30 feet or more in width (drafting pen width). Those shown by USGS as intermittent, or perennial streams less than 30 feet wide, are omitted for simplicity, except to complete important hydrologic connections. Those that have been channelized will carry the 'x' excavated special modifier.

Vegetation along and in all streambeds is classified Palustrine, and may be shown as linear breaks along the riverine systems.

Lacustrine

A number of Lacustrine systems, primarily open water bodies greater than 20 acres, may be either natural or impounded. Open water in these systems is generally classified as Unconsolidated Bottom, either limnetic (deeper than 6 ft) or littoral (shallower than 6 ft), and considered permanently or semi-permanently flooded. Exposed shoreline aound the lakes is classified as Unconsolidated Shore. Seasonally flooded by spring snowmelt or otherhigh water conditions.

The four wetland vegetation types, Aquatic Bed, Emergent, Scrub-Shrub, and Forest are all associated with the Lacustrine systems, but are themselves considered Palustrine.

Conclusion

All of the wetland communities mentioned are fragile ecosystems, and provide important wildlife and waterfowl habitat. The most vulnerable are the depressional marsh areas which, while providing excellent food and shelter resources for wildlife, are regularly drained and cleared for agricultural use. An effort should be made to analyze each depressional wetland area as well as other wetland systems, and to assess their potential as natural habitat before modifications are undertaken.

Bibliography

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NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/SUBSTRATE
PEM	Palustrine Emergent	Marsh, pond, and lake shoreline, riverbank vegetation	Typha sp. (Cattail) Polygonum sp. (Smartweed) Scirpus sp. (Bulrush) Juncus sp. (Rush) Eleocharis sp. (Spikerush) Equisetum sp. (Horsetail) Carex sp. (Sedge) Lythrum salicaria (Purple loose-strife)
PSS1	Palustrine Scrub-Shrub, Broad-leaf deciduous	Shrub vegetation	Cephalanthus occidentalis (Buttonbush)
PF01	Palustrine Forest, Broad-leaf deciduous	Forest vegetation	Ulmus sp. (Elm) Salix nigra (Black willow) Platinus occidentalis (Sycamore) Populus deltoides (cottonwood) Alnus sp. (Alder) Fraxinus sp. (Ash) Acer negundo (Boxelder) Acer rubrum (Red maple) Acer saccharinum (Silver maple)
PAB	Palustrine Aquatic bed	Aquatic bed	Lemna sp. (Duckweed) Nuphar sp. (water-lily) Jussiaea repens (Primrose-willow)

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/SUBSTRATE
PUB	Palustrine Unconsolidated Bottom	Pond- open water	Open Water
PUS	Palustrine Unconsolidated Shore	Pond- shoreline	Unvegetated sand, gravel, mud.
L1UB	Lacustrine Unconsolidated Bottom, limnetic	Lake- deep water	open water
L2UB	Lacustrine Unconsolidated Bottom, littoral	Lake- shallow water	open water
L2US	Lacustrine Unconsolidated shore littoral	Lake- shoreline	Unvegetated sand, gravel, mud.
R2UB	Riverine Upper perennial, unconsolidated bottom	Perennial river or creek	open water
R2US	Riverine upper perennial, unconsolidated shore	River bar, river flat	open water
R4SB	Riverine intermittent streambed	Intermittent stream	Open water or Unvegetated sand, gravel, mud.