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NATIONAL WETLANDS INVENTORY

NOTES TO USERS

SOUTHWESTERN KANSAS

1:100,000 SCALE MAP

DODGE CITY SE

NATIONAL WETLANDS INVENTORY
1:100,000 MAP NARRATIVE

Dodge City SE

INTRODUCTION

The U.S. Fish and Wildlife Service, Division of Habitat Resources is conducting an inventory of the wetlands of the United States. The National Wetlands Inventory (NWI) is establishing a wetland data base in both map and computer forms for the entire country. The NWI information will serve to identify the current status of U.S. wetlands and can be used as a reference point from which future changes in wetlands can be evaluated.

PURPOSE

The purpose of Notes to Users is to provide general information regarding the production of NWI maps and wetlands found within the same physiographic area. Notes to Users are not intended to include a complete description of all wetlands found in the area nor provide complete plant species information.

MAP PRODUCTION

The wetland classifications that appear on these National Wetland Inventory Base Maps are in accordance with Cowardin, et. al. (1977). The delineations were produced through stereoscopic interpretation of 1:58,000 scale color infrared photographs taken on various dates from June to September of 1985.

Limited initial field checking and ground truthing was conducted in June, 1986 to determine the general biologic and hydrologic systems of the area, and the degree of accuracy that could be portrayed by the condition and date of photography relative to those observed at that time.

The user of the map is cautioned that, due to the limitations of mapping primarily through aerial photointerpretation, a small percentage of wetlands may have gone unidentified. Changes in landscape could have occurred since the time of photography; therefore, some discrepancies between map and current field conditions may exist. Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either design or products of this inventory, to define limits of proprietary jurisdiction of any

federal, state, or local government or to establish the geographical scope of regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State, or local agencies concerning specific agency regulatory programs and proprietary jurisdictions that may affect such activities. Any discrepancies encountered in the use of the maps should be brought to the attention of Regional Wetlands Coordinator; U.S. Fish and Wildlife Service, Region 6, P.O. Box 24586, Denver, Colorado, 80225. Aerial photointerpretation was completed by Martel Laboratories, Inc., St. Petersburg, Florida.

GEOGRAPHY

The area covered by this study is between 100° and 101°W longitude and 37° and 37°30'N latitude, roughly southwestern Kansas. Bailey's Ecoregion Classification (1980) identifies this area as 2533 in the eastern half (Humid Temperate domain, Prairie Division, Tall-Grass Prairie Province, Bluestem-Gamma Prairie Section) and 3113 in the western half (Dry Domain, Steppe Division, Great Plains Shortgrass Prairie Province, Gamma-Buffalograss Section).

The eastern tall-grass prairie is characterized by flat and rolling plains with relief of less than 300 ft. The dominant natural vegetation includes many species of tall and mid grasses such as western wheatgrass, blue gramma, buffalograss, western ragweed, foxtail barley, switchgrass and sandgrass. Prickly pear and sand sage are also common in drier areas. Woody vegetation is rare except on the cottonwood floodplains. Very little of the natural vegetation remains as over 90% of the area is farmed, primarily for winter wheat, soybeans, and corn.

The western half of the study area, the short-grass prairie, is characterized by rolling plains and tablelands. The plains are flat with occasional valleys formed by dissecting streams. The native vegetation of the area was primarily short grasses, typically buffalograss and many species of brome. Currently however, the majority of the land is planted in winter wheat. Woody vegetation is restricted to the floodplains.

CLIMATE

In the eastern portion of the map the average annual rainfall is 20-24 inches, occurring predominately from April to September. Evaporation and precipitation almost balance on a yearly basis and is therefore considered a subhumid climate. However, this area approaches a situation where evaporation rates exceed precipitation. Annual temperatures can range from highs over 100°F to lows of -20°F. (Meade County Soil Survey).

In the western portion of the map, the evaporation rate exceeds precipitation and the area is considered to be a dry climate. Average annual rainfall is between 16-20 inches decreasing westward. Over 75% falls from April to September. Rainfall is described as scant and haphazard with heavy isolated thunderstorms. The temperature range is similar to that in the eastern portion of the map, 100°F to -20°F.

WETLAND COMMUNITIES

Marine: Not Present

Estuarine: Not Present

Riverine:

The Cimarron River, located in the southern half of this map area, is the major drainage system. Historically, this river provided permanent year-round flow recharged by rainfall and snowmelt from Rocky Mountains. But, in recent years, expanded use of pivot irrigation has caused the Ogallala aquifer to be depleted 10 to 14 times faster than it can be recharged (Wolfe, 1986). Upstream impoundments and water diversions in Colorado withdraw flow otherwise sent downstream.

Consequently, the reduction in surface flow and drastic drop in the ground water table have reduced this river to an intermittent stream. As it enters Kansas along the Colorado border it is virtually a dry riverbed and is charged for brief periods early in the spring or after heavy rains (R4SBA). As the river continues its course eastward it is fed by tributaries; the flow increases and can last into or through the summer months (R4SBC-R4SBA). Only a 20 mile section of the Cimarron from Liberal to the Oklahoma border retains its permanent flow (R2UBH).

Localized conditions such as irrigation usage, and rainfall amounts, have a direct and very pronounced impact on the amount of water present in the river. Therefore, the classification of the riverine wetlands can be very segmented on not only the Cimarron River, but all streams throughout the region.

For similar reasons, the other smaller rivers, streams, and creeks of this area have also been characterized by marked reduction in stream flow. Except for rare instances where a stream is still fed by an active spring or purposely fed, all have been reduced to intermittent status (R4SBF, R4SBC, R4SBA). The life of the flow is again dependent on local activity, water usage, and manipulations. Commonly, smaller streams will be impounded or diverted into irrigation ditches (R2SBCx-R4SBAX) to be used for crop or livestock. When possible, the streambed will be filled and plowed to increase agricultural efficiency and productivity. As a result, drainageways are interrupted, segmented, or lost entirely.

In conclusion, the overall effect of the present agricultural practices in this part of Kansas has been a dramatic reduction in the groundwater and surface recharge of the riverine systems. Few permanent perennial rivers still exist or are confined to small segments. Small intermittent creeks have been disrupted or lost entirely to crop land. Additionally, the reduced flow has allowed for the establishment of plant communities, both woody and herbaceous, which changed some of the characteristics of the riverine environment.

Palustrine:

Forested riparian communities have become established because of the reduced stream flows. Forested and shrub stands of eastern cottonwood (Populus deltoides), willows (Salix spp.) and salt cedar (Tamarix gallica) are common along the present floodplains and upper terraces of the Cimarron river. However, only those woody plants directly in the river beds or on the immediate adjacent flats or terraces are flooded on a yearly basis and considered wetland (PSSA, PFOA).

From northeast of Liberal to the Oklahoma border, the Cimarron is permanent (R2UBH). Larger expanses of forested, shrub and emergent communities can be found on the floodplain. This is the only area of the Cimarron River in Kansas that has such an expanded floodplain still supporting a variety of hydric vegetation. This is due primarily to the fact that the terrain in the area prohibits pivot irrigations.

Wetland emergent species such as cattail (Typha latifolia), hardstem bullrush (Scirpus acutus), and arrowhead (Sagittaria sp) along with the aquatic bed species of duckweed (Lemna sp) and watermeal (Wolffia sp) can be found along this permanent area of the Cimarron river. Upstream or in the drier sections of the river, the hardstem bullrush community is joined by other species of three square (Scirpus sp), water parsnip (Sium sp), horsetail (Equisetum sp), spikerushes (Eleocharis spp), and sedges (Carex spp, Cyperus spp) (PEMC). Foxtail barley (Hordium jubatum), goldenrod (Solidago sp), dock (Rumex sp), lambsquarter (Chenopodium album), and smartweed (Polygonum sp) are the dominant species found on the river flats and as the understory in the willow-saltcedar-cottonwood wetland associations (PUSA, PSS/EMA).

Crooked Creek, Sand Creek, and other rivers and streams of the study area are also vegetated by similar wetland riparian communities both woody and herbaceous. However, these smaller, less violent streams naturally allowed for some succession of forested species along their channels. But again, due to the drop in the water table, only those directly in the streambed and flooded on a yearly basis are classified as wetland (PFOA, PSSA). Likewise, the type of emergent and aquatic bed communities are also associated with the reduced flow stream depending upon the availability of water and the general size of the tributary (PEM/ABF, PEMC, PEMA).

Small creeks and un-named water courses are often reduced to pockets or disconnected linear segments of emergents also because of the agricultural practices. These emergent species are primarily foxtail barley, smartweed, and western wheatgrass (Agropyron smithii) that can adapt to the drier and more disturbed conditions (PEMA).

There is numererous spring activity in the south eastern portion of the map, especially around Profit Lake, Indian Creek, Big Sandy Creek and Johns Creek. Many areas here are springfed allowing a variety of seasonal (PEMC) and temporary (PEMA) emergent vegetation such as those mentioned.

Playa wetlands comprise a major source of wildlife habitat in Southwestern Kansas. State officials estimate, however, that over 90% of the basins present at the turn of the century have been actively altered or completely drained. In addition, the severe depletion of groundwater sources has cut off the natural recharge. Less than 30% of the original basins are still hydrologically active.

As a result, the natural diversity and variability of the habitat has been lost. The vast majority of the basins observed during field reconnaissance had surface water lasting only brief periods, generally after heavy rains or early in the spring; only enough to delay tillage a few weeks (PEMA). Common species for these wetland basins include foxtail barley, little barley (Hordeum pusillum), frogbite (Phyla cuneifolia), burr ragweed (Ambrosia grayii), smartweed, and spikerushes. Saltgrass (Distichlis spicata) was often an indicator of a saline basin.

Seasonally flooded basins found in this area support a more diverse community of emergents. In addition to the temporary species found along the periphery, these basins will also support a central zone of smartweed, spikerush, three square, sedges, dock, and often times cattail or hardstems bullrush. Only one semipermanent basin is known to exist in a 17,000 square mile area. This basin, located near Meade, is in an area of artesian activity. It supports aquatic species such as pondweeds (Potamogeton spp) (PEM/ABF) and a small shrub community along the basin edge (PSSA) in addition to the more common emergents.

Another large area of artesian spring activity is northwest of Fowler. This artisan valley consists mainly of Ness soil supporting large expanses of seasonal to temporary vegetation. This artisan area is currently being drained to increase agricultural usage (PEMCd, PEMAd).

Thousands of small (less than 20 acres) palustrine wetlands have been created through impoundments and excavations. The degree of flooding of these wetlands is a function of size and depth and the amount of surface drainage. Because of the nature of the water levels, drawdown and pioneering plants are the most effective invaders of the exposed flats of these small impoundments. Fireweed (Kochia sp), cocklebur (Xanthium strumarium), white clover (Melilotus albus), and common sunflower (Helianthus sp) are the most prevalent species. Therefore, these waterbodies will be classified entirely as unconsolidated shore when seasonally or temporarily flooded (PUSCh, PUSAh). Semipermanently flooded impoundments, on the other hand, are considered to be stable enough to support aquatic bed species by the end of the growing season. Although not documentable during ground truthing, species such as pondweeds, duckweed, and algae are expected in this situation (PABFh).

Pits and dugouts are considered to be unvegetated regardless of their size and permanence. The steep sides, rocky walls, and sterile bottoms offer little support to wetland plant growth. In addition, they are often poor in organic nutrients needed to support aquatic plant and animal life (PUBFx, PUSCx, PUSAx).

Palustrine wetlands associated with the shores and flats of larger impounded reservoirs (greater than 20 acres) such as Lake Meade were found to be associated with more persistent hydrophytic wetland vegetation. The more stable water supply lends itself to the establishment of species such as smartweed, dock, cattail, hardstem bullrush, three-square, and small cottonwood and willow saplings. The flat or shoreline are classified according to vegetated signature and water levels on the photography (PEMFh, PEMCh, PEMAh, PSSCh, PSSAh, PFOAh).

Lacustrine:

Lacustrine water bodies (greater than 20 acres) have been formed by adding impoundment structures to the larger streams and creeks. These lakes are important wildlife and recreation areas. Meade Lake, also known as Lake Larabee, is located southwest of Meade. In the 1920's Meade Lake was recharged by artesian springs. In the 1970's, output from the "never failing" artesian springs that once fed Meade Lake dropped dramatically due to the use of pivot irrigation and subsequent decline of the Ogallala aquifer. Terracing practices in nearby fields reduced surface water flow to the lake and rainfall was scant. In 1985, pipeline was laid to providing a new flow of water (Wolfe 1986). Currently, Meade Lake appears to be on the rise and is again considered a permanent deep water habitat (L1UBHh).

SOILS

Soil is an important indicator of hydric conditions and is one of the basic criteria in the definition of wetland as defined by Cowardin et al. (1979). The Soil Conservation Service (SCS) has published soil surveys that cover the study area. These soil surveys provide important information in understanding the general area including the specifics of land use.

Soils listed by the SCS as having hydric characteristics include Ness and Randall soils which were found to support basin related hydric vegetation. Lofton Series, although not on the 1985 SCS Hydric Soils List, was found to have wetland characteristics. The soil is found in upland depressions with surface runoff ponded long enough to delay planting and harvesting and sometimes even drowning crops.

Soil Surveys used for this study area are from the following counties:

Clark

Haskell

Seward

Gray

Meade

PLANT LIST

(species listed as most commonly observed)

WOODY

PSSC

indigo bush (Amorpha fruticosa) (OBL)
rough leaf dogwood (Corus drummondii) (FAC)
seep willow (Baccharis salicina) (FAC)

PSSA

willow (Salix spp) (FAC-OBL)
salt cedar (Tamarix gallica) (FACW)
russian olive (Elaeagnus angustifolia) (FAC)

PFOA

eastern cottonwood (Populus deltoides) (FAC-DRA)
green ash (Fraxinus pennsylvanica) (FACW)

U

American elm (Ulmus americana) (FAC)
locust (Gleditsia sp) (FAC)
catalpa (Catalpa speciosa) (FACU)
hackberry (Celtis occidentalis) (FACU)
mulberry (Morus rubra) (FACU)
walnut (Juglans sp) (FACU)

HERBACEOUS

PABF

duckweed (Lemna minor) (OBL)
watermeal (Wolffia sp) (OBL)
algae (Endomorpha sp) (OBL)

PEMF

cattail (Typha latifolia) (OBL)
arrowhead (Sagittaria sp) (OBL)
hardstem bullrush (Scirpus acutus) (OBL)

PEMB

three square (Scirpus americanus) (OBL)

PEMC

three square (Scirpus americanus) (OBL)
fox sedge (Carex vulpinoidea) (OBL)
water parsnip (Sium sp) (OBL)
sedge (Carex sp) (Cyperus sp) (FACW-OBL)
dock (Rumex sp) (FAC-OBL)
horsetail (Equisetum, sp) (FACW)

PEMA

needle spikerush (Eleocharis acicularis) (OBL)
smartweed (Polygonum spp) (FACU-OBL)
foxtail barley (Hordeum jubatum) (FACW)
saltgrass (Distichlis spicata) (FACW)
barnyard grass (Echinochola crusgalli) (FACW-DRA)
goldenrod (Solidago sp.) (FACU-FACW)
marsh elder (Iva sp) (FAC)
frogbite (Phyla cuneifolia) (FAC) (AKA: Lippia cuniata)
little barley (Hordeum pusillum) (FAC)
burr ragweed (Ambrosia grayii) (FAC)
yellow clover (Melilotus officinalis) (FACU-DRA)
lambquarter (Chenopodium album)

U

snowy milkweed (Asclepias speciosa) (FAC)
fireweed (Kochia sp) (FACU)
cocklebur (Xanthium strumarium)
sand verbenia (Abronia fragrans)
japanese brome (Bromus japonicus) (FACU)
downy brome (Bromus tectorum)
buffalo grass (Buchloe dactyloides) (FACU)
western wheatgrass (Agrophron smithii) (FAC-FACU)
bull thistle (Cirsium sp) (FACU)
common ragweed (Ambrosia artemisiifolia) (FACU-DRA)
pigweed (Amaranthus retroflexus) (FACU)
sand sage (Artemisia filifolia)
poison ivy (Rhus radicans)
Schenardus paniculatus
Festuca oxtiflora
Haplopappus ciliatus
common sunflower (Helianthus sp)
primrose (Oenothera grandous)
wild plum (Prunus americana)
bedstraw (Gallium sp)
prickly poppy (Argemone sp)
white clover (Melilotus albus)

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/SUBSTRATE
R4SB	Riverine - Intermittent Stream Bed	Creek, Stream, Canal	Unvegetated: Sand, mud, gravel Vegetated: Pioneering species (non-emergent)
PFO	Palustrine - Forested	River forest Riparian River/Creek beds	Vegetated: Eastern Cottonwood (<u>Populus deltoides</u>) Green Ash (<u>Fraxinus</u> <u>pennsylvanica</u>) Hackberry (<u>Celtis</u> <u>occidentalis</u>) American Elm (<u>Ulmus americana</u>)
PSS	Palustrine - Scrub shrub	River shrubs, River banks	Willow (<u>Salix</u> spp) Salt Cedar (<u>Tamarix galica</u>) Russian Olive (<u>Elaeagnus</u> <u>angustifolia</u>)
PEM	Palustrine - Emergent	Marsh, Playa, Basin, Slowmoving or drying stream or river choked with emergents "wallows" "mudhole"	Three Square (<u>Scirpus americanus</u>) Smartweed (<u>Polygonum</u> spp) Foxtail Barley (<u>Hordeum jubatum</u>) Western Wheatgrass (<u>Agropyron smithii</u>) Spikerush (<u>Eleocharis</u> sp) Dock (<u>Rumex</u> sp) Water Parsnip (<u>Sium</u> sp) Cattail (<u>Typha latifolia</u>)
PAB	Palustrine Aquatic Bed	Pond, Impoundment, Slow moving or drying stream or river choked with aquatics, Beaver dam	Duckweed (<u>Lemna</u> sp) Watermeal (<u>Wolffia</u> sp) Algae (<u>Endomorpha</u> sp)

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/SUBSTRATE
PUB	Palustrine - Unconsolidated Bottom	Reuse pit, Gravel pit	Unvegetated: Gravel mud, sand Vegetated: Pioneering species
PUS	Palustrine - Unconsolidated Shore	Impoundment Reuse pit	Unvegetated: Sand, mud, gravel Vegetated: Pioneering species
L1UB	Lacustrine Limnetic Unconsolidated Bottom	Lake, Reservior	Unvegetated: Sand, mud, gravel
L2US	Lacustrine Littorial Unconsolidated Shore	Lake flat Shore	Unvegetated: Sand, mud, gravel

COLLATERAL DATA

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SPECIAL INTERPRETATION CONSIDERATIONS

Many photo signatures expected to represent wetland communities, especially along streams and rivers, were determined to be upland through ground truthing. Only those found directly in or adjacent to the stream bed are temporarily flooded (PFOA, PSSA). One exception is the area east of Liberal where the Cimarron River is permanent, and along streams and creeks that are spring-fed.

Some basin showing definite signatures but not correlated with Lofton, Ness or Randall soils were delineated on the basis that the Soil Conservation Service may not have included them as soil inclusions in upland soil delineations.

The drained modifier "d" was added to all delineations in the artesian valley area, northwest of Fowler, associated with the stream channel that has been ditched. Seasonal emergent areas correspond roughly with Ness soil and temporary areas correspond with Leshara clayloam. This is the only area where Leshara clayloam (not listed in the SCS Soils List) was found to support wetland associated vegetation.

NWI#55