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FIELD SUMMARY REPORT

I. INTRODUCTION

The purpose of this field trip was to finish the wetland mapping of the State of New Mexico by ground truthing numerous representative wetland sites, thus establishing wetland infrared signatures on aerial photography, and allowing photointerpretation to be facilitated.

A) Date of Field Trip: 12/08/85 to 12/20/85

B) Personnel:

Keith Patterson, Chief Cartographer, Martel Laboratories, Inc.*

David Sumpter, Biologist/Photointerpreter, Martel Laboratories, Inc.

Karl J. Schmidt, Geographer/Photointerpreter, Martel Laboratories, Inc.

Charles Mullins, Asst. Regional Coordinator (Region II), USFWS.

Les Vilchek, National Consistency Control Officer, USFWS*.

* Present from 12/08/85 to 12/14/85 only.

C) Map Names: 10 maps 1:100,000

Carlsbad NE, SE
El Paso NE
Fort Sumner NE, NW, SE, SW
Hobbs SW
Roswell NE
Tucumcari SW

D) Photography:

Type: Color Infrared (CIR)
Scale: 1:58,000

Dates:	Percent Coverage
06/02/83	3.39
06/03/83	6.93
06/14/83	5.28
06/18/83	1.32
06/19/83	35.64
06/20/83	18.81
06/30/83	6.27
07/23/83	3.96
09/18/83	3.63
09/25/83	2.64
10/22/83	9.24
05/26/84	1.13
06/09/84	1.13

E) Collateral Data:

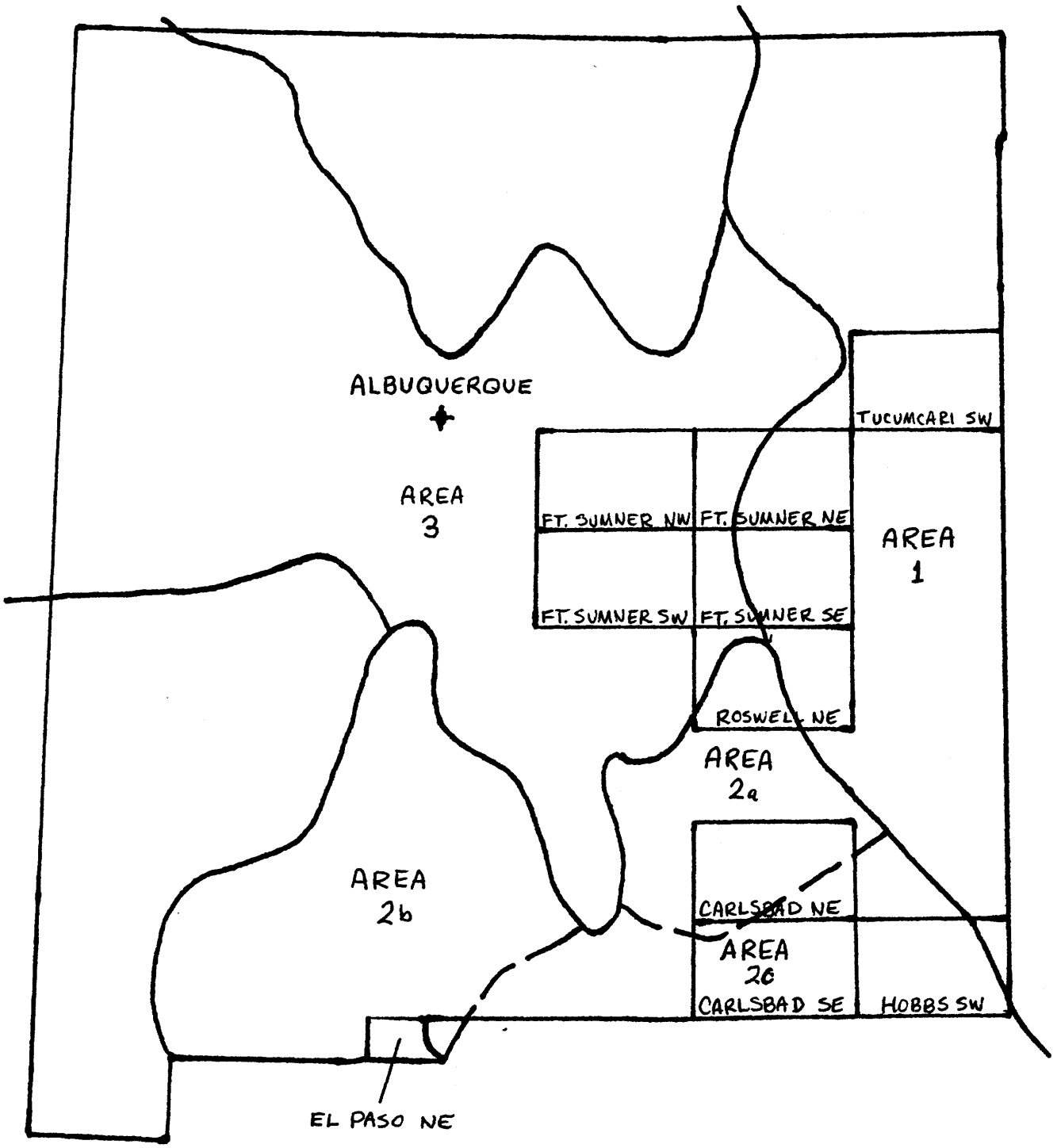
1. USGS quadrangles.
2. Soil surveys for the counties of Andrews, El Paso, Deaf Smith, and Oldham, Texas; Chaves, Dona Ana, Eddy, Harding, Lea, Lincoln, Otero, San Miguel, and Torrance, New Mexico.
3. Climatological data for the months of May - October 1983 and April - June 1984.
4. Dean Ricer (Park Superintendent, Living Desert State Park, Carlsbad, N.M.)
5. Bailey, Robert G., Description of the Ecoregions of the United States, U.S. Dept. of Agriculture, Misc. Publication, 1980.

II. ECOREGION OVERVIEW

There are three (3) ecoregions present within the work area (see ecoregion map). Area 1 lies in the Great Plains - Shortgrass Prairie Province (Bailey, Robert G.). Landforms consist of flat plains with valleys, canyons, mesas, and buttes. The climate is semiarid with temperatures averaging 60°F and precipitation of 10-15 inches per year. Indigenous vegetation consists of various grasses, sagebrush, mesquite, cacti, and yucca. Scattered pinyon pine and juniper are also present.

Area 2 lies in the Chihuahuan Desert Province (Bailey, R.G.) and consists of three (3) sections: a, b, and c. Landforms in this province consist of undulating plains with average elevations of 4,000 ft. Washes, arroyos, and playa lakes abound. This climate is quite arid with temperatures ranging from 50° to 65°F (annual average) and precipitation averages of 8-10 inches per year. Area 2a has substantially more grasses and shrubs than area 2b. Indigenous vegetation in area 2a consists largely of grama grasses, rabbitbrush, and mesquite. In 2b, the indigenous vegetation consists of creosotebush, ocotillo cactus, and sparse grasses. Area 2c is closer to area 2b than 2a in both aridity and vegetation. Predominant vegetation consists of creosotebush, cacti, and various scattered grasses.

Area 3 lies in the Colorado Plateau Province (Bailey, R.G.). Topographically, this province consists of tablelands of moderate relief with widely-spaced, narrow stream valleys. Due to the higher elevations found in the province, precipitation averages 10-20 inches annually. At lower elevations, to the south, vegetation consists of grasses, sagebrush, and various cacti. To the north, elevations increase and the area is characterized by pinyon pine, juniper, grasses, and various shrubs.


ALBUQUERQUE
AREA
3
TUCUMCARI SW
FT. SUMNER NW
FT. SUMNER NE
AREA
1
FT. SUMNER SW
FT. SUMNER SE
ROSWELL NE
AREA
2a
AREA
2b
CARLSBAD NE
AREA
2c
CARLSBAD SE
HOBBS SW
EL PASO NE

ECOREGIONS

III. BIOLOGICAL CHARACTERISTICS OF WETLANDS

A. Marine: Not present

B. Estuarine: Not present

C. Lacustrine: Several lakes are present in the work area, some natural and others due to impoundments. Three (3) major reservoirs are present: Lake Sumner, Lake McMillan, and Ute Lake. All three are the result of impoundments. Both Lake Sumner and Ute Lake are located in the northern part of the work area, and are situated on the Pecos and Canadian Rivers, respectively.

Lake McMillan is in the southern part of the work area, located northwest of Carlsbad, N.M., on the Pecos River. On sand flats, along the periphery of the lake were dense areas of salt cedar (Tamarix gallica). This salt cedar covers vast areas and is by far the dominant vegetation around the lake. South of McMillan dam, a new, larger dam (Brantley), is under construction. This dam is being built in response to the siltation of McMillan. When completed, it will back water up into Lake McMillan over the current dam. Inundation will be such that it will alter the wetlands in and around Lake McMillan. The new dam is scheduled for completion in late 1986, or early 1987 (Dean Ricer, Living Desert State Park). All reservoirs will be classified as L1UBHh or L2UBHh as is appropriate. The impoundment modifier (h) will be used in conjunction with vegetation classifications where such vegetation is determined to be affected by said impoundment.

In addition to the three reservoirs, there were several salt lakes of varying sizes. These will generally be classified as seasonally flooded (L2USC). Peripheral areas will be classifed as temporarily or intermittently flooded (L2USA or L2USJ) where appropriate.

Playa lakes were also present in large numbers. However, these were determined to have established emergent vegetation at some point in the growing season and will therefore be discussed and classified in the palustrine system.

D. Riverine: The three (3) major river systems in the work area are the Canadian River, the Pecos River, and the Rio Grande. The Canadian River will be classified as permanently flooded, lower perennial riverine (R2UBH); the Pecos River will be classified as seasonally flooded, (due to irrigation/flood control) lower perennial riverine (R2USC) north of Santa Rosa, N.M. South of Santa Rosa, the Pecos will be classified as permanently flooded, lower perennial riverine (R2UBH) due to the addition of water into the channel by springs in the area.

The Rio Grande, due to its channelization, will be classified as an excavated semi-permanently flooded streambed (R4SBfx).

Four (4) basic types of intermittent streams were encountered: streams indicated as perennial on the topographic quadrangle and the entire channel is wet on the photography; streams where most of the channel is wet with areas of protruding flats and indicated as intermittent on the topo; streams indicated as intermittent in which most of the channel is dry with scattered pockets of water or substantial sand flat development indicative of water flow; and narrow channels of substantial length which act as tributaries of higher water regime streams. This last type of intermittent stream (the arroyo) occurs in vast numbers and will not be delineated in order not to congest more vital areas. If the arroys absence creates hydrologic discontinuity, it will, however, be delineated. These four stream types will generally be classified as semi-permanently, seasonally, temporarily, and intermittently flooded (R4SBF, R4SBC, R4SBA, and R4SBJ), respectively. Riverine flats will be classified as R2USC, R2USA, and R2USJ, or R4SBC, R4SBA, and R4SBJ, depending on subsystem, signature, and location. Major irrigation canals will be classified as seasonally flooded streambeds (R4SBCx) with an excavation modifier due to their channelized nature.

E. Palustrine: Forested areas in this part of eastern New Mexico are scarce. Tree-dominated wetlands occur in pockets along major river systems and around major lakes. Trees in these pockets were invariably found to be cottonwood (Populus sp.) and will be classified as temporarily flooded (PFO1A).

Areas of scrub-shrub were dominated by a single, ubiquitous wetland type: salt cedar (Tamarix gallica), a needle-leaved deciduous shrub. These could be found in pure stands along stream channels, in stream channels, around open water bodies, and in meander scars near major river systems. When associated with riverine systems, salt cedar was found in both temporarily and intermittently flooded conditions and will be classified therefore as either PSS2A or PSS2J. When associated with large, impounded areas (such as McMillan dam), salt cedar was found in seasonally flooded conditions as well and will therefore be classified as PSS2C.

West of Hobbs, N.M., several isolated 'donut-shaped rings' of acacia (Acacia sp.) and hackberry (Celtis sp.) appeared around slightly raised, circular areas of mixed mesquite and unidentified grass. This 'ring' of hackberry and acacia will be classified as PSS1A, with the center being upland.

In areas with considerable water, Lake Tucumcari, for example, semi-permanently flooded emergents were found. The predominant vegetation was cattail (Typha sp.). In seasonally flooded areas, along the periphery of open water bodies, and in channels fed by springs, emergent wetland species such as common reed (Phragmites sp.), rushes (Juncus sp.), bulrush (Scirpus sp.) and saltgrass (Distichlis spicata) were found. Among the species found in temporarily flooded emergent areas were spike rush (Eleocharis sp.), smartweed (Polygonum sp.), cocklebur (Xanthium sp.), and giant sacaton (Sporobolus sp.).

By far, the most common palustrine wetland were the impounded arroyos. These impoundments provide water for the numerous cattle found in the area. These impoundments will be classified as temporarily or intermittently flooded (PUSAh, PUSJh). These appear quite often with temporarily or intermittently flooded emergents upstream, behind the impounded water. Occasionally, these impoundments no longer have standing water but are covered with emergent growth. Both of the previous situations involving emergents will be classified as PEM1Ah or PEM1Jh, as is appropriate.

An unusually wet area was that of Santa Rosa, N.M. and environs. The water table is near the surface there and produces extensive areas of temporarily flooded emergent growth. Among the species found were common reed (Phragmites sp.), saltgrass (Distichlis spicata), rushes (Juncus sp.), and bulrush (Scirpus sp.). Becuase of the presence of a substantial amount of water, several permanently flooded open water bodies were found. These were classified as PUBH.

Eastern New Mexico also has many playa lakes. As mentioned previously under the lacustrine system, these playas were found to have emergent growth in and around them, and to exist in temporarily or intermittently flooded conditions and will therefore be classified as PEM1A or PEM1J. Common emergent species included: saltgrass (Distichlis spicata), smartweed (Polygonum sp.) and wheatgrass (Agropyron sp.). Often associated with these playa lakes are excavations designed to hold and store water for future use in watering cattle. They will carry the classification of PUSAx.

There were a number of springs in this part of eastern New Mexico. These springs appear as seasonal manifestations of fluctuations in the water table. They will generally be classified as either PEM1C (if emergent growth is evident) or PUSC (if no emergent growth is evident). Typical wetland emergent species found were cattail (Typha sp.), sedges (Carex sp.), rushes (Juncus sp.), and bulrush (Scirpus sp.). If a spring feeds a stream channel or lies within the channel itself and the affected stream channel shows evidence of emergent growth, this affected area of emergents will be classified as temporarily flooded (PEM1A).

IV. IMAGERY

Film quality used in photointerpretation varied from excellent to fair. Resolution was generally high and dominant colors in the film emulsion were dark blue, dark green, and light blue.

Climatic conditions in eastern New Mexico were not unusual at the times of photography with the exception of the lower five (5) photographs in strip 7 of Roswell NE. This area had experienced an unusual amount of rainfall (over 2.5") on 20 October 1983, two days prior to the date of photography.

Field conditions were in some cases wetter than that shown by the photography. Eastern New Mexico had experienced a small amount of winter rainfall prior to the field trip and this was at variance with the pre-rainy season photography.

In some areas, the distinction between salt cedar (Tamarix gallica) and mesquite (Prosopis sp.), an upland species, is difficult to determine in the photography. In most cases, salt cedar appears as a muted red to maroon shrub, while mesquite is generally dark green to black in appearance.

Another difficulty encountered in interpretation is distinguishing between playa lakes with surfaces of unconsolidated shore and those with emergent growth. Several sites showed no indication of emergent growth upon field inspection, whereas the photography often indicated emergent growth present.

One additional difficulty was encountered while in the field. Some vegetation types (especially grasses) were difficult to identify due to their lack of seasonal growth structures, e.g., leaves, buds and seeds which are often quite instrumental in establishing identification.

V. SUMMARY

Eastern New Mexico is an area of high plains, desert, and plateau. Landforms consist of mesas, buttes, stream valleys, arroyos, canyons and shifting sand. Precipitation is limited, humidity is low, and temperatures, on the average, are low at night and high during the day. Indigenous vegetation consists primarily of xerophytes, typified by the predominance of cacti and other small shrubs and grasses.

Wetlands in this area consist of three large reservoirs, several salt lakes of varying size, many playa lakes in all sizes (these range from a few acres to several hundred acres in extent). There are three major river systems which drain the area; these are fed by numerous smaller tributary streams. Irrigation canals criss-cross farmed areas near river systems and reservoirs. Dominant wetlands are those assoicated with salt cedar and impoundments used for watering cattle.

The overall quality of the imagery was good. Resolution was generally high and emulsions were in standard colors (dark green, dark blue, and light blue). All of these factors will allow photointerpretation to be facilitated.

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