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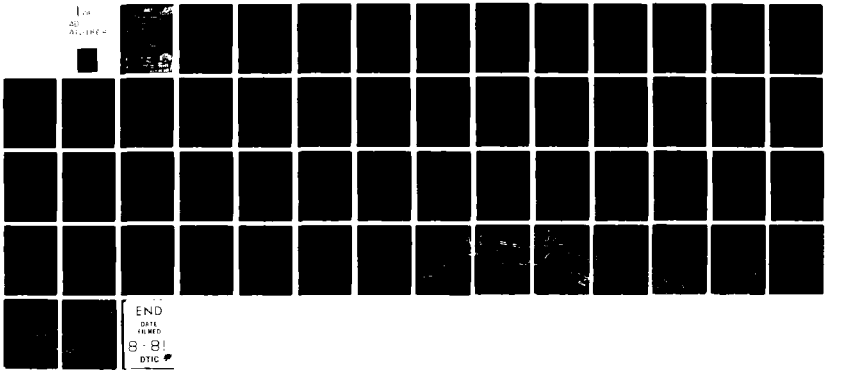

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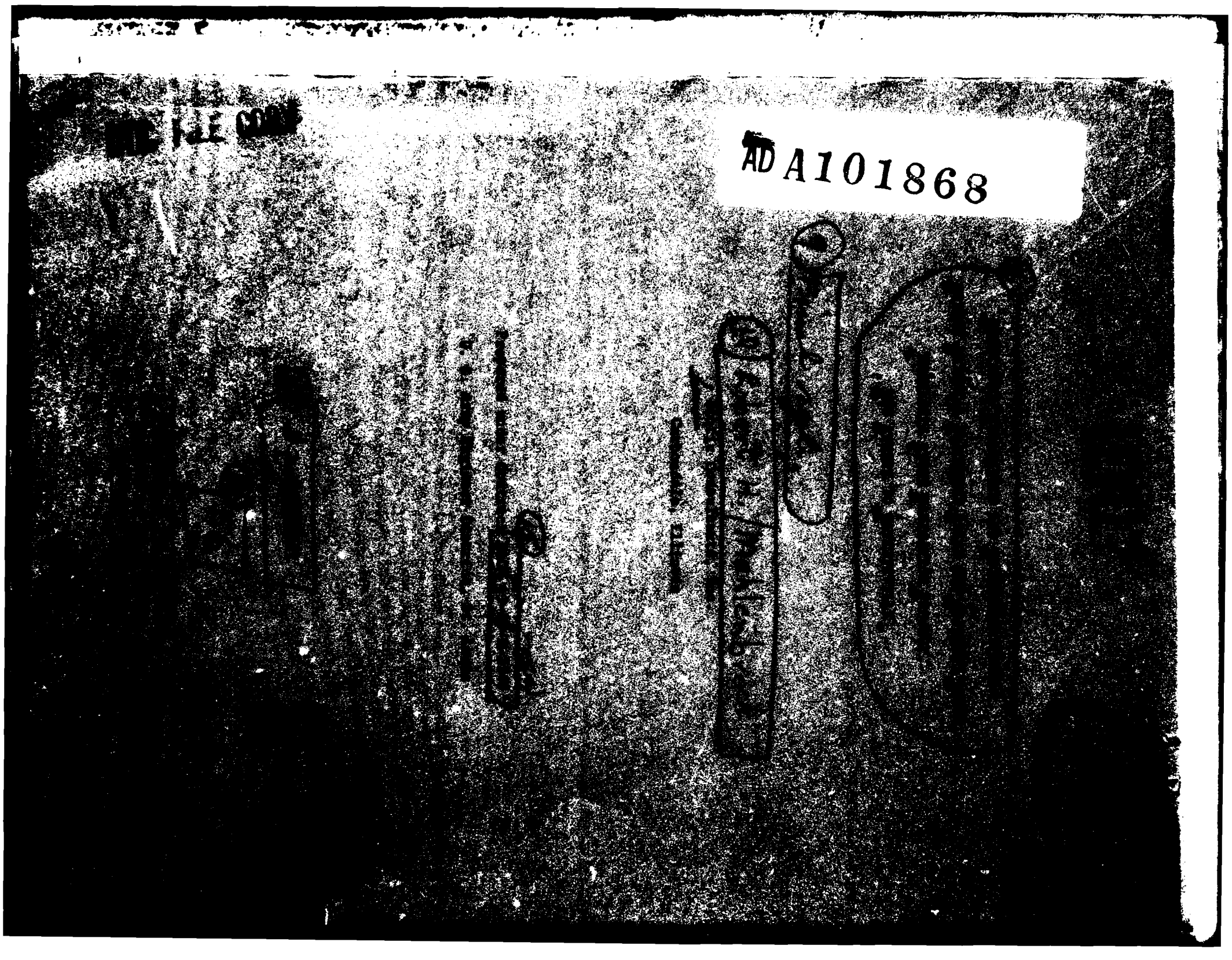

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The report details terrestrial biotic interrelationships which exist on and near project lands, both inside and outside of the Dredge Material Placement areas along the Kaskaskia River between Canal Mile 28.4 and 36.2.

Secondary objectives were to report on test vegetation plots initiated in 1974 and recommendations concerning placement of future dredge material and esthetic potentials of the areas.

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VEGETATION EVALUATION AND RECOMMENDATIONS:

DREDGE MATERIAL PLACEMENT AREAS AND ADJACENT LANDS,

KASKASKIA RIVER NAVIGATION PROJECT,

NEW ATHENS TO FAYETTEVILLE

Biotic Consultants, Inc.

Carbondale, Illinois

Prepared under Contract DACW 43-80-M-2349

U. S. Army Engineer District, St. Louis

June 3, 1981

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Objectives of the Study

The primary objective of the project is the development of a report detailing terrestrial biotic interrelationships which now exist on and near project lands, both inside and outside of the Dredge Material Placement areas along the Kaskaskia River between Mile 28.4 and Mile 36.2.

Secondary objectives are a report on test vegetation plots initiated in 1974 and recommendations concerning placement of future dredge material and aesthetic potentials of the areas.

Materials and Methods

The entire project area on both sides of the Kaskaskia River between miles 28.4 and 36.2 was traversed on foot four times during the project period, twice between September 1 and November 15, 1980, and twice between March 15 and May 29, 1981. In addition, bimonthly trips were made during December, 1980, and January and February, 1981, to observe winter conditions in the area.

All habitats within the boundaries of the project area were studied. These included dredge material placement sites, oxbows, bottomland forests, old fields, and cultivated fields.

For logistical purposes, the DMP areas were divided into 12 units, with numbers 1-6 occurring on the east side of the Kaskaskia River, from Fayetteville to New Athens, and numbers 7-12 occurring on the west side.

Vascular plants observed on each trip to the area were recorded, along with habitat, abundance, and general ecology. Animals were observed primarily on special trips conducted periodically for two hours beginning at sunrise and for two hours prior to sunset.

Soil pH of the dredge material was taken in the autumn and in the spring from five randomly selected localities in each of the twelve dredge material placement sites by use of a portable pH testing kit.

Biotic Consultants participated in a scoping meeting with personnel from various agencies at the St. Louis District office of the Corps of Engineers on May 21, 1981.

Location and History of the Project Area

The Kaskaskia River rises in central Champaign County and flows southwesterly in a meandering course for about 325 miles. It empties into the Mississippi River at Mile 118 above the mouth of the Ohio River. The Kaskaskia River basin covers an area of approximately 5,840 square miles and includes parts of 12 counties in the central and southwestern portions of Illinois. The watershed is approximately 175 miles in length and 33 miles wide. (Biotic Consultants Report, 1980.)

The elevations in the basin vary from 740 feet above mean sea level at the headwaters to 385 feet above mean sea level where the Kaskaskia River empties into the Mississippi River. The topography is generally flat, but be-

comes more hilly as the river approaches its mouth. Most of the area has been glaciated during the glacial period.

Authorized by the River and Harbor Act of October 23, 1962 (Public Law 87-874), the U. S. Army Corps of Engineers, St. Louis District, sought to improve navigation for the lower fifty miles of the river by constructing a channel 9 feet deep and approximately 225 feet wide.

The project consisted of enlarging the present channel, making overbank cutoffs to eliminate sharp bends, making necessary bridge and utility alterations, and constructing a dam at approximately Mile 0.8 with a single lock 84 feet wide and 600 feet long. To maintain this navigation project, the Corps must operate the lock and dam at the lower end of the project and must dredge the navigation channel. The maintenance also includes revetment and stabilization of the DMP banks. Maintenance of a 9-foot navigation channel throughout the length of the project will require dredging on a recurring basis.

The navigation improvements shortened the length of the lower 50.2 miles of the river to 36.2 river miles. Between the mouth of the river and Mile 18.0, the navigation channel was kept essentially within the existing river channel. Between Mile 18.0 and Mile 36.2, the river was completely canalized because the existing alignment had many bends which would have made barge towing difficult. All cutoffs created by canalization were plugged at the upstream end and left open at the downstream end. (Biotic Consultants Report, 1980.)

The Illinois General Assembly, by an Act approved April 4, 1963, authorized the Department of Public Works & Buildings, predecessor of the Department of Transportation, to enter into Agreements with the United States Government to insure performance of local participation. In an Act approved April 26, 1965, the Illinois General Assembly provided that the Department of Transportation, as local sponsor for the federally authorized Kaskaskia River Basin Project, had full authority and control over any and all land acquired in connection with the development of the Kaskaskia River. As local sponsor, the Illinois Department of Transportation purchased in fee title approximately 18,000 acres between Fayetteville and the confluence with the Mississippi River. (Illinois Department of Conservation Report, 1979.)

In 1971, agreements were completed between the Illinois Department of Conservation and the Illinois Department of Transportation to manage the Illinois Department of Transportation lands.

In February, 1979, the Illinois Department of Transportation completed the Land and Water Use Master Plan for the Kaskaskia River Navigation Project. As a result, the Illinois Department of Conservation became the land managers for land along the Kaskaskia River.

Test Vegetation Plots

During May, 1974, experimental vegetation plots were established on Dredge Material Placement (DMP) areas just south of the Route 15 bridge at Fayetteville on the east side of the Kaskaskia River. Ten contiguous plots were established on the upper DMP areas above the service road which parallels the Kaskaskia River. The plots contained a variety of test species, fertilization variation, and mulching variation. The plots were to be monitored periodically to evaluate the different species planted and the effect of fertilization and mulching in the test plots.

One evaluation was conducted on 27 September 1974, approximately four months after the inception of the project. Apparently no further evaluations occurred until the contractor's study during August, September, and October, 1980.

The ten plots are on a moderate slope, lying side by side. Each plot measures 109 linear feet by 40 linear feet, a total of 4,360 square feet, or 0.1 acre.

Information obtained from conversations with persons originally associated with the project included the following factors:

(1) A 14-inch rainfall during a one week period was recorded on the Kaskaskia Watershed around Fayetteville starting on the day after planting.

(2) An extremely dry summer occurred in the project area in 1974.

(3) No records were kept on season of deposition and filling of individual disposal cells.

On 27 September 1974, a group of persons from the Illinois Division of Waterways, the Illinois Department of Conservation, and the Army Corps of Engineers, St. Louis District, met to make an initial evaluation on the experimental vegetation plots for levee stabilization.

During August, September, and October, 1980, Biotic Consultants relocated the ten test plots and made a thorough evaluation of each plot, 6 1/4 years after they were initiated. Then, during May, 1981, Biotic Consultants again evaluated the ten test plots.

Following is a summary of the initial plantings, the 1974 evaluation made four months after the initial plantings, and the 1980 and 1981 evaluations.

Test Plot	Initial Planting May, 1974	Evaluation 27 September 1974	Evaluation Fall, 1980	Evaluation Spring, 1981
1	Crown Vetch "Penngift" Alfalfa Fertilized Mulched	Crown Vetch - not much Alfalfa - fair to good	Crown Vetch - 1 clump Alfalfa - abundant No erosion Other Common Plants: Hairy White Aster Common Ragweed Purple Top Korean Lespedeza	Crown Vetch - common Alfalfa - common No erosion Other Common Plants: Sleepy Catchfly Common Ragweed
2	Crown Vetch "Emerald" Alfalfa Fertilized	Crown Vetch - good Alfalfa - good	Crown Vetch - rare Alfalfa - abundant No erosion Other Common Plant: Hairy Crab Grass	Crown Vetch - common Alfalfa - common ORV road Other Common Plants: Cut-leaved Evening Primrose Smooth Brome
3	Crown Vetch "Penngift" Alfalfa No Fertilizer No Mulch	Crown Vetch - none Alfalfa - little Erosion - bad	Crown Vetch - abundant Alfalfa - moderate Erosion - severe Other Common Plants: Hairy White Aster Rough Buttonweed	Crown Vetch - common Alfalfa - common Erosion - severe 70% cover Other Common Plant: Six Weeks Fescue
4	Crown Vetch "Emerald" Alfalfa No Fertilizer No Mulch	Crown Vetch - none Alfalfa - moderate Erosion - bad	Crown Vetch - moderate Alfalfa - moderate No erosion Dense vegetation Other Common Plants: Switch Grass Hairy Panic Grass	Crown Vetch - common Alfalfa - common No erosion 95% cover Other Common Plants: Tall Goldenrod Johnny-jump-up

Test Plot	Initial Planting May, 1974	Evaluation 27 September 1974	Evaluation Fall, 1980	Evaluation Spring, 1981
5	Crown Vetch "Penngift" Red Top (= Purple Top) Rye Limed No Mulch No Fertilizer	Crown Vetch - fair Red Top - none Rye - none Good Vegetation Other Common Plants: Partridge Pea	Crown Vetch - abundant Purple Top - abundant Rye - none No erosion Other Common Plants: Common Crab Grass Croton Brown-eyed Susan	Crown Vetch - common Purple Top - common Rye - none Some erosion 95% cover Other Common Plant: Alfalfa
6	Crown Vetch "Emerald" Red Top (= Purple Top) Rye Limed No Mulch No Fertilizer	Crown Vetch - poor Red Top - none Rye - none Other Common Plants: Partridge Pea	Crown Vetch - abundant Purple Top - abundant Rye - none No erosion Other Common Plants: Switch Grass Brown-eyed Susan Hairy Crab Grass Common Ragweed	Crown Vetch - poor Purple Top - common Rye - none Little erosion 90% cover Other Common Plants: Milfoil Switch Grass Sleepy Catchfly
7	Crown Vetch "Penngift" Alfalfa Fertilized Mulched (same conditions as #1)	Crown Vetch - little Alfalfa - good No erosion Weedy vegetation Other Common Plants: Common Ragweed Smartweed Partridge Pea Common Crab Grass	Crown Vetch - moderate Alfalfa - abundant No erosion Other Common Plants: Hairy White Aster Korean Lespedeza Purple Top Hairy Panic Grass	Crown Vetch - common Alfalfa - common Little erosion 95% cover Other Common Plants: Milfoil Sleepy Catchfly
8	Crown Vetch "Emerald" Fescue Fertilized Mulched	Crown Vetch - very good Fescue - none Some erosion Other Common Plants: Partridge Pea	Crown Vetch - abundant Fescue - moderate Little erosion Other Common Plants: Purple Top Hairy Crab Grass Hairy Panic Grass Rough Buttonweed Korean Lespedeza	Crown Vetch - common Fescue - common Some erosion 85% cover Other Common Plant: Purple Top

Test Plot	Initial Planting May, 1974	Evaluation 27 September 1974	Evaluation Fall, 1980	Evaluation Spring, 1981
9	Crown Vetch "Penngift" Korean Lespedeza Orchard Grass Mulched No Fertilizer	Crown Vetch - fair Korean Lespedeza - good Orchard Grass - none Other Common Plants: Wild Millet (= Switch Grass) Partridge Pea	Crown Vetch - moderate Korean Lespedeza - common Orchard Grass - none No erosion Other Common Plants: Purple Top Hairy Crab Grass Hairy White Aster Hairy Panic Grass Giant Ragweed	Crown Vetch - common Korean Lespedeza - common Orchard Grass - none Little erosion 95% cover Other Common Plants: Wild Cranesbill Nodding Chickweed Pepper Grass
10	Crown Vetch "Penngift" Korean Lespedeza Orchard Grass No Mulch No Fertilizer	Crown Vetch - fair Korean Lespedeza - good Orchard Grass - none	Crown Vetch - moderate Korean Lespedeza - common Orchard Grass - none No erosion Other Common Plants: Giant Ragweed Common Ragweed Switch Grass Horseweed Hairy White Aster Hairy Crab Grass	Crown Vetch - moderate Korean Lespedeza - common Orchard Grass - none No erosion 95% cover Other Common Plants: Pepper Grass Wild Cranesbill Giant Ragweed

Discussion of Test Vegetation Plots

While the concept of establishing and monitoring test vegetation plots is a valid one, the particular experiment set up south of Fayetteville in 1974 is invalid since periodic evaluation of the plots did not occur between September, 1974, and August, 1980.

No conclusion can be drawn on the effect of fertilizing the plots and on the effects of mulching.

The exact time of appearance of the different species present on the test plots is unknown. Crown vetch is common on all ten test plots in May, 1981, although it was not purposely planted on all ten plots.

There is no indication as to the effect of the 14 inches of rain that fell on the test plots immediately after seeding, or the effect of the exceptionally dry summer of 1974. Seasonal monitoring of the test plots each year would have provided valuable information.

It is suggested that when future DMP is deposited, new test plots with several variables should be set up and intensively monitored for a period of several years to get an accurate assessment of each variable involved. Test plots should be set up on the banks of the deposits and on the flat deposit sites.

Terrestrial Biology of the Project Area

When the Kaskaskia River was canalized, the biology of the area was drastically altered. That section of the river, particularly between Fayetteville and New Athens, was extremely tortuous before canalization. After the channel was straightened, many of the major curves were left as old oxbows, plugged at the upstream end and left open at the downstream end. These oxbows generally are surrounded by saturated or inundated bottomland floodplain forests. The silty, sandy, and gravelly material from the dredging operation was used to create embankments along the sides of the channel. In some cases, the dredge material was spread up to 0.6 mile from the new channel.

In some places, these dredge material placement sites are bordered by the bottomland woods of the oxbows; in other cases the border is an old field habitat.

The following paragraphs describe the general biological conditions of the old oxbows, the bottomland forests, the old fields, and the dredge material placement sites.

The old oxbows, cut off at one end by the canalization of the Kaskaskia River, are bordered by a dense growth of Cephalanthus occidentalis (buttonbush). In the older oxbows which have become silted-in, the buttonbush may completely cover over the water surface.

The oxbows, which usually have stagnant open water, are frequently covered by floating aquatic vascular plants such as Azolla mexicana (mosquito fern), Lemna minor (common duckweed), and Spirodela polyrhiza (great duckweed). Many rotting logs float in the water of the oxbows, and these logs are usually covered by a great growth of vegetation. Plants frequently found on the decaying logs include Echinochloa pungens (barnyard grass), red-rooted sedge (Cyperus erythrorhizos), sedge (Cyperus strigosus), pinkweed (Polygonum pensylvanicum), and side-flowering skullcap (Scutellaria lateriflora). Seedlings of Populus deltoides (cottonwood), Salix nigra (black willow), Fraxinus pensylvanica var. subintegerrima (green ash), and Cephalanthus occidentalis (buttonbush) also usually occur.

The surrounding saturated or inundated bottomland floodplain forests have a good diversity of woody species. The canopy is usually dominated by a combination of Acer negundo (box elder), Acer saccharinum (silver maple), Betula nigra (river birch), Celtis laevigata (sugarberry), Fraxinus pensylvanica var. subintegerrima (green ash), Platanus occidentalis (sycamore), Populus deltoides (cottonwood), Quercus macrocarpa (bur oak), Quercus palustris (pin oak), Salix nigra (black willow), Ulmus americana (American elm), Carya tomentosa (mockernut hickory), and Quercus bicolor (swamp white oak).

Shrubs and woody vines play a major role in the ecology of these bottomland floodplain forests. Frequent shrubs are Cornus drummondii (rough-leaved dogwood), Forestiera acuminata (swamp privet), and swamp holly (Ilex decidua). Common woody vines are Ampelopsis cordata (raccoon grape), Campsis radicans (trumpet creeper), Parthenocissus quinquefolia (Virginia creeper), Toxicodendron radicans (poison ivy), and Vitis cinerea (winter grape).

Understory herbs in the bottomland forests are diverse because the changes in topography affect the local hydrology. Wetter areas in these forests are inhabited by Boehmeria cylindrica (false nettle), Carex grayii (bur sedge), Carex muskingumensis (swamp sedge), Cinna arundinacea (wood reed), Impatiens biflora (spotted touch-me-not), Laportea canadensis (wood nettle), Leersia virginica (white grass), Mimulus alatus (winged monkey flower), Pilea pumila (clearweed), and Saururus cernuus (lizard's-tail). Common herbs in less saturated areas are Desmodium paniculatum (panicled tick trefoil), Geum canadense (white avens), Paspalum fluitans (swamp bead grass), Sanicula canadensis (black snakeroot), and Solidago gigantea (late goldenrod).

A few abandoned fields lie adjacent to the project area. These fields are in various stages of succession, depending upon their age. Most of the old fields have been abandoned for at least eight years. Consequently, all of the old fields have an invasion of woody plants, chief of which are Diospyros virginiana (persimmon), Sassafras albidum (sassafras), Rhus glabra (smooth sumac), and Rhus copallina (winged sumac). Scrambling or trailing vines are plentiful. These include Toxicodendron radicans (poison ivy), Rubus allegheniensis (wild blackberry), and Rubus flagellaris (dewberry). Many grasses and herbs abound. Andropogon virginicus (broomsedge), Festuca pratensis (tall fescue), Bromus inermis (smooth brome), and Tridens flavus (purple-top) are the most abundant and important grasses in the old fields. Major herbs are Aster pilosus (hairy aster), Solidago canadensis (tall goldenrod), Erigeron canadensis (horseweed), Erigeron annuus (annual fleabane), Pycnanthemum tenuifolium (mountain mint), Melilotus alba (white sweet clover), and Melilotus officinalis (yellow sweet clover).

The massive dredging operation during the canalization of the Kaskaskia River has resulted in a drastic and often complete change in the original physiognomic and vegetational patterns of the area. The dredge placement areas line both sides of the river. They range in width from a few yards to 0.6 mile. The composition ranges from fine mud and silt to sand to coarse sandy gravels. Biotic Consultants, in a study prepared for the Illinois Department of Conservation in 1980, found that the primary factors influencing vegetational composition of the dredge placement appear to be:

1) Composition of the dredge placement (sandy or gravelly deposits are subject to rapid drainage and less capillarity, with a consequent increase in water stress on the colonizing vegetation. . .these factors create a xeric environment during much of the growing season, slowing plant growth rates and severely limiting the number of species capable of surviving in the habitat).

2) Slope of the dredge placement (steeper slopes erode much more severely than flat deposits, and are consequently much less vegetated than flat dredge placement of the same age and moisture conditions).

3) Time of year of deposition of final dredge placement on a site (apparently, certain recently deposited dredge placement that is bare in late spring or early summer is rapidly colonized by newly-matured Acer saccharinum (silver maple) seeds, resulting in a dense choked growth of silver maple seedlings to the exclusion of other vegetation. Similar dredge placement deposited at other times of year are not subject to an immediate influx of silver maple seeds and remain in a generally herbaceous successional pattern for several years at least, perhaps because the maple seeds cannot germinate and survive in otherwise suitable sites that have been already colonized by the aggressive weedy vegetation that is adapted to these severely disturbed areas).

4) Age of the dredge placement (as the deposits age, natural successional patterns result in a transition from annual herbaceous weeds, through a stage of perennial, biennial, and annual, mostly herbaceous species, until finally, if the site is not continually disturbed and moisture conditions are favorable, a woody community will dominate the site).

The pH of the dredge placement areas does not seem to be a major factor in the distribution of vegetation. All of the tests conducted during this study indicated that the pH ranged from 6.2 - 7.0.

Dredge placement areas which are primarily composed of fine mud and silt and which are moist generally harbor woody growth. Frequently the woody species form dense colonies of spindly saplings, with the species composition either monocultures of or mixtures of Acer saccharinum (silver maple), Betula nigra (river birch), Platanus occidentalis (sycamore), Populus deltoides (cottonwood), Salix interior (sandbar willow), Salix nigra (black willow), and Ulmus rubra (slippery elm).

Somewhat drier sites with a predominance of fine mud and silt have the same woody composition as those listed in the preceding paragraph, but the number of individual plants is considerably diminished. These stabilized, drier sandy DMP areas present a savanna-like appearance. Herbaceous species are frequent, the most characteristic being Aster pilosus (hairy aster), Digitaria

sanguinalis (crabgrass), Elymus virginicus (Virginia wild rye), Erigeron canadensis (horseweed), Oenothera biennis (common evening primrose), Schizachyrium scoparium (little bluestem), and Solidago canadensis (tall goldenrod).

The most extensive DMP areas are dominated by herbaceous vegetation, with woody plants occurring only sporadically or not at all. Silty and muddy DMP areas which drain poorly have a low diversity of weedy species, with Aster pilosus (hairy aster) the dominant species. Also common are Bidens aristosa (swamp marigold), Panicum dichotomiflorum (knee grass), and pinkweed (Polygonum pensylvanicum).

DMP areas which range from moist to well-drained finer sands to coarse silts support a vegetation similar to that of old fields. In a few areas of stabilized, well-drained sand, native prairie species form an interesting assemblage. Prairie grasses in these situations are Andropogon gerardii (big bluestem), Elymus virginicus (Virginia wild rye), Panicum virgatum (switch grass), Schizachyrium scoparium (little bluestem), and Sorghastrum nutans (Indian grass). Prairie herbs include Lespedeza capitata (round-headed bush clover) and Astragalus canadensis (ground plum).

The xeric DMP areas, characterized by excessive drainage in coarse sands and gravels, are the most sparsely vegetated regions in the project area, sometimes appearing desert-like. The limited species which occur are Bromus tectorum (downy brome), Cyperus filiculmis), and Panicum lanuginosum (panic grass).

Threatened and Endangered Species

During the course of the study, no species of plant nor animal currently on the Illinois or Federal lists of threatened and endangered species was observed in the project area.

Annotated List of Vascular Plants and Their Ecology

The following list provides detailed habitat and distribution information for all vascular plant taxa known to occur within the study area. Species concepts and nomenclature follow Mohlenbrock (1975).

Those species which occur in the dredge material placement (DMP) are preceded by an asterisk.

*Acalypha rhomboidea Raf. THREE-SEEDED MERCURY. Occasional but inconspicuous plant in more moist areas of DMP, particularly those with a predominance of sand.

*Acer negundo L. BOX ELDER. Occasional invader of DMP, particularly where moisture accumulates. A typical tree of the disturbed floodplain woods.

*Acer saccharinum L. SILVER MAPLE. Abundant tree in the disturbed floodplain forests and on the moist, silty DMP. This species sometimes forms dense stands.

*Achillea millefolium L. YARROW. A common species on stabilized sandy DMP. It is one of the earlier species to germinate each spring.

Agrimonia parviflora Ait. SWAMP AGRIMONY. Common in usually disturbed, floodplain woods; common along oxbows.

Agrimonia rostellata Wallr. WOODLAND AGRIMONY. Common in floodplain woods.

*Agrostis alba L. RED TOP. Abundant weedy species found in DMP with a wide range of moisture present.

*Agrostis hyemalis (Walt.) BSP. TICKLE GRASS. Occasional grass on dry, sandy DMP.

*Albizia julibrissin Duraz. ALBIZIA. An introduced small tree which persists in disturbed open areas adjacent to DMP.

*Allium vineale L. WILD GARLIC. Aggressive weed which invades the more moist, sandy DMP.

*Alopecurus carolinianus Walt. CAROLINA FOXTAIL. Short-lived grass appearing in early spring on silty, stabilized DMP.

*Amaranthus albus L. TUMBLEWEED. Occasional weed in dry, sandy DMP.

*Amaranthus tamariscinus Nutt. WESTERN WATER HEMP. Frequent and sometimes dominant herb on moist, sandy DMP.

*Amaranthus tuberculatus (Moq.) Sauer. WATER HEMP. Uncommon herb on moist, sandy DMP.

*Ambrosia artemisiifolia L. COMMON RAGWEED. Abundant and rank weed in most areas of disturbance, particularly in DMP areas and in disturbed floodplain woods. This species is a major colonizer of DMP.

*Ambrosia bidentata Michx. WESTERN RAGWEED. Occasional species of dry, sandy DMP, often seeming to grow where no other plant can.

*Ambrosia trifida L. GIANT RAGWEED. Common, rank weed in moist or dry DMP, often reaching its best development in silty material.

*Ammannia coccinea Rottb. SCARLET LOOSESTRIFE. An infrequent species on moist, silty DMP; more typical in open, muddy, littoral zones of the sloughs.

Ampelopsis cordata Michx. RACCOON GRAPE. Common arborescent vine in floodplain forests adjacent to the sloughs.

Amphicarpa bracteata (L.) Fern. HOG PEANUT. Infrequent herbaceous vine in disturbed floodplain woods.

*Amsonia tabernaemontana Walt. BLUE STAR. Uncommon herb in weedy thickets at the edge of DMP areas.

*Andropogon gerardii Vitman. BIG BLUESTEM. This typical native prairie grass grows occasionally on the drier sandy DMP. Where it occurs, it commonly is associated with little bluestem (Schizachyrium scoparium), Indian grass (Sorghastrum nutans), and switch grass (Panicum virgatum).

*Andropogon virginicus L. BROOMSEDGE. Occasionally established on dry, sandy DMP.

*Apocynum cannabinum L. DOGBANE. Common herb in moist DMP, particularly those bordering water bodies.

*Arenaria serpyllifolia L. THYME-LEAVED SANDWORT. Occasional low-growing herb spreading into disturbed, sandy DMP.

*Aristida oligantha Michx. THREE-AWN GRASS. Wiry grass establishing well in dry, sandy DMP; seemingly tolerant to severe environmental conditions.

*Asclepias incarnata L. SWAMP MILKWEED. Common perennial in sloughs and along muddy shores; less frequent in moist, silty DMP.

*Asclepias syriaca L. COMMON MILKWEED. This weedy species is found in most disturbed habitats, including silty DMP.

Aster lateriflorus (L.) Britt. WHITE ASTER. Frequent fall-flowering species of floodplain woods and sloughs.

*Aster ontarionis Wieg. ONTARIO ASTER. Occasional in floodplain woods and in moist DMP.

*Aster pilosus Willd. HAIRY ASTER. Abundant species in all disturbed situations; very common in moist or dry, sandy or silty DMP.

*Aster vimineus Lam. ASTER. Occasional aster in moist DMP and along the edges of floodplain woods.

*Astragalus canadensis L. CANADIAN MILK VETCH. Rare species in DMP, associated with Lespedeza capitata (round-headed bush clover).

*Betula nigra L. RIVER BIRCH. Common tree along sloughs and on stable floodplain terraces; forming a shrubby tree on moist DMP.

*Bidens aristosa L. SWAMP MARIGOLD. Common in moist areas, including moist DMP.

*Bidens cernua L. NODDING BUR MARIGOLD. Occasional species in moist DMP; also abundant along muddy shores.

*Bidens frondosa L. COMMON BEGGAR'S TICKS. Occasional in shaded moist thickets on DMP.

*Boehmeria cylindrica (L.) Sw. FALSE NETTLE. Common in floodplain woods, rarely getting into moist DMP.

*Boltonia asteroides (L.) L'Her. FALSE ASTER. Common in moist habitats, including moist, open DMP.

*Bromus commutatus Schrad. BROME GRASS. Common invader of silty, moist DMP.

*Bromus inermis Leyss. SMOOTH BROOM. Frequent grass, often introduced for erosion control; occurs regularly on silty DMP.

*Bromus tectorum L. DOWNY BROME. Extremely tolerant grass of all DMP types, from silt to sand and from moist to dry. This and the sedge Cyperus filiculmis are sometimes the only species in extreme dry sandy DMP.

*Calystegia sepium (L.) R. Br. HEDGE BINDWEED. Infrequent creeping species of moist DMP.

*Campsis radicans (L.) Seem. TRUMPET CREEPER. Abundant species in nearly all habitats in the project area; often forms dense entanglements in established DMP.

*Cannabis sativa L. MARIJUANA. Infrequent coarse herb near edges of dredge placement areas.

*Carex cephalophora Muhl. SEDGE. Infrequent species in moist DMP; also found along the edges of the floodplain woods.

Carex frankii Kunth. SEDGE. Occasional in association with floodplain woods.

*Carex granularis Muhl. SEDGE. Infrequent species in moist, silty DMP.

*Carex grayi Carey. BUR SEDGE. Frequent in wet floodplain woods; rare in moist, silty DMP.

*Carex hirsutella Mack. SEDGE. Infrequent in dryish DMP.

Carex muskingumensis Schwein. SWAMP SEDGE. Characteristic and common sedge of the old oxbow woods.

*Carex scoparia Schk. SEDGE. Common species in floodplain woods; infrequent on established sandy DMP.

Carex typhina Michx. SEDGE. Frequent in wet depressions in floodplain woods.

Carex vulpinoidea Michx. FOX SEDGE. Common along borders of old oxbows.

Carya ovata (Mill.) K. Koch. SHAGBARK HICKORY. Infrequent tree in slope woods between oxbows and dredge placement areas.

Carya tomentosa (Poir.) Nutt. MOCKERNUT HICKORY. Occasional tree in woods bordering old oxbows.

*Cassia fasciculata Michx. PARTRIDGE PEA. Common species in sandy DMP; also abundant in all other disturbed sites in the project area.

*Catalpa speciosa Warder. HARDY CATALPA. Rare tree sprouting on a sandy bank south of Fayetteville.

Celtis laevigata Willd. SUGARBERRY. Common in floodplain woods.

*Celtis occidentalis L. HACKBERRY. Occasional tree in oxbow woods; infrequent invader in moist DMP.

*Cenchrus longispinus (Hack.) Fern. SAND BUR. Uncommon, spiny-fruited grass in rather dry, sandy DMP.

*Cephalanthus occidentalis L. BUTTONBUSH. Common shrub in shallow standing water and muddy soil along the borders of old oxbows; sometimes found in very moist, silty DMP.

*Cerastium nutans Raf. NODDING MOUSE-EARED CHICKWEED. One of the first species to appear each spring on moist DMP.

Ceratophyllum demersum L. COONTAIL. Occasional aquatic in sloughs and oxbows.

*Cercis canadensis L. REDBUD. Rare small tree in moist DMP.

*Chamaesyce maculata (L.) Small. NODDING SPURGE. Common species in disturbed habitats, including sandy DMP.

*Chamaesyce supina (Raf.) Moldenke. CARPET SPURGE. Common species in dry, sandy DMP.

*Chasmanthium latifolium (Michx.) Yates. SEA OATS. Often forms dense stands in moist open sites; infrequent in moist DMP.

*Chenopodium album L. LAMB'S QUARTERS. Common weed throughout the project area, including silty DMP.

*Chenopodium ambrosioides L. MEXICAN TEA. Infrequent on silty DMP.

Cinna arundinacea L. WOOD REED. Common coarse grass in floodplain woods.

Circaea quadrisulcata (Maxim.) Franch. & Sav. var. canadensis (L.) Hara. ENCHANTER'S NIGHTSHADE. Occasional in floodplain woods.

*Cirsium vulgare (Savi) Tenore. BULL THISTLE. Common in a wide variety of disturbed habitats, including silty DMP.

*Commelina communis L. COMMON DAYFLOWER. Occasional on muddy shores and in moist depressions in DMP.

*Cornus drummondii C.A.Mey. ROUGH-LEAVED DOGWOOD. Common small tree in moist thickets adjacent to oxbows; infrequent in moist depressions in DMP.

*Coronilla varia L. CROWN VETCH. Locally abundant in silty DMP; apparently the best species for stabilizing slope areas.

*Crotalaria sagittalis L. RATTLEBOX. Infrequent small herb in sandy DMP.

*Croton glandulosus L. var. septentrionalis Muell.-Arg. SAND CROTON. Infrequent in disturbed, dry, sandy DMP.

Cryptotaenia canadensis (L.) DC. HONEWORT. Common herb in floodplain woods.

Cuscuta glomerata Choisy. DODDER. Common parasite on a variety of plants in floodplain woods.

Cuscuta polygonorum Engelm. DODDER. Infrequent parasite on a variety of plants, particularly adjacent to oxbows.

*Cynanchum laeve (Michx.) Pers. BLUEVINE. Scrambling vine along oxbows and in moist DMP.

*Cynodon dactylon (L.) Pers. BERMUDA GRASS. Infrequently established grass on drier, sandy DMP.

*Cyperus erythrorhizos Muhl. RED-ROOTED SEDGE. A common species of moist, disturbed areas, including wet DMP.

*Cyperus esculentus L. NUT SEDGE. Common in wet, disturbed situations; infrequent in moist DMP.

*Cyperus filiculmis Vahl. SEDGE. Tufted perennial in the most xeric, sandy DMP; sometimes the only species occurring.

Cyperus strigosus L. STRAW SEDGE. Common species in wet, disturbed habitats.

*Dactylis glomerata L. ORCHARD GRASS. Common species in disturbed areas, but rare in DMP.

*Desmanthus illinoensis (Michx.) MacM. ILLINOIS MIMOSA. Common, low-growing species of sandy and silty DMP, sometimes covering extensive areas.

*Desmodium ciliare (Muhl.) DC. Occasional species of dry, sandy DMP.

*Desmodium paniculatum (L.) DC. PANICLED TICK TREFOIL. Occasional to common species in a variety of undisturbed and disturbed habitats; occasional on sandy DMP.

*Dianthus armeria L. DEPTFORD PINK. Uncommon inhabitant on stabilized DMP.

*Digitaria ischaemum (Schreb.) Muhl. SMOOTH CRAB GRASS. One of the pioneer species to invade sandy DMP, tending to diminish as community becomes more stabilized.

*Digitaria sanguinalis (L.) Scop. COMMON CRAB GRASS. Frequent weed in most disturbed habitats, including DMP.

*Diodia teres Walt. ROUGH BUTTONWEED. Occasional species of dry, sandy DMP.

*Diospyros virginiana L. PERSIMMON. Infrequent woody invader on dry, sandy DMP.

*Draba brachycarpa Nutt. SHORT-FRUITED WHITLOW GRASS. The first species to come up in the spring in silty DMP.

*Echinochloa pungens (Poir.) Rydb. BARNYARD GRASS. An abundant weed in a variety of disturbed habitats, although infrequent in moist DMP.

*Eclipta alba (L.) Hassk. YERBA DE TAJO. Common small herb along wet shores of the oxbows; infrequent in moist DMP.

Eleusine indica (L.) Gaertn. GOOSE GRASS. Common weed in disturbed areas; occasional in silty DMP.

*Eleocharis obtusa (Willd.) Schult. BLUNT SPIKE RUSH. Common in marshes, sloughs, and along banks; occasional in moist depressions in DMP.

*Elymus virginicus L. VIRGINIA WILD RYE. Regularly found in woodland borders and old fields; not common in silty DMP.

*Equisetum hyemale L. var. affine (Engelm.) A.A. Eaton. SCOURING RUSH. Found sparingly on established sandy deposits where it sometimes forms extensive colonies.

*Eragrostis cilianensis (All.) Mosher. STINKING LOVE GRASS. Moderately common in moist, silty DMP.

*Eragrostis hypnoides (Lam.) BSP. SANDBAR LOVE GRASS. Characteristic grass on muddy shores and sand bars; infrequent on silty and sandy DMP.

*Eragrostis pectinacea (Michx.) Nees. SMALL LOVE GRASS. Common but inconspicuous grass in sandy DMP.

*Eragrostis spectabilis (Pursh) Steud. LOVE GRASS. Occasional in sandy DMP.

*Erigeron annuus (L.) Pers. ANNUAL FLEABANE. Common in a variety of disturbed habitats, including well-drained DMP.

*Erigeron canadensis L. HORSEWEED. This species invades disturbed areas; it is abundant in sandy DMP.

*Erigeron strigosus L. FLEABANE. Occurring in the same habitats as and often growing with Erigeron annuus (annual fleabane).

*Eupatorium rugosum Houtt. WHITE SNAKEROOT. Common in adjacent woodlands; uncommon in moist, silty DMP.

*Eupatorium serotinum Michx. LATE BONESET. Common in disturbed habitats; occasional on stable DMP areas.

*Euphorbia corollata L. FLOWERING SPURGE. Frequent on well-drained DMP.

*Festuca pratensis Huds. TALL FESCUE. Abundant weedy grass in open, disturbed areas; occasional on grassy DMP banks.

*Fimbristylis autumnalis (L.) Roem. & Schultes. SEDGE. Usually on sand bars; rarely in low, moist, sandy depressions of DMP.

*Fraxinus pensylvanica Marsh. var. subintegerrima (Vahl) Fern. GREEN ASH. Common component of floodplain woods; one of the first woody pioneers on established sandy DMP.

*Froelichia gracilis (Hook.) Moq. COTTONWEED. Known only from the most xeric, sandy DMP.

*Galium aparine L. ANNUAL BEDSTRAW. Common understory plant in floodplain woods; infrequent in moist, silty DMP.

Galium triflorum Michx. SWEET-SCENTED BEDSTRAW. Common species in floodplain woods.

*Geranium carolinianum L. CAROLINA CRANESBILL. Common in moist, silty DMP; one of the first plants to emerge in the spring.

*Gerardia tenuifolia Vahl. SLENDER FALSE FOXGLOVE. Occasional fall-flowering species of moist DMP.

Geum canadense Jacq. WHITE AVENS. Common herb of floodplain woods.

*Gleditsia triacanthos L. HONEY LOCUST. Common tree in floodplain forests; invades sandy DMP rather successfully.

*Gnaphalium obtusifolium L. OLD FIELD BALSAM. Occasional species on well-drained DMP.

*Helianthus annuus L. ANNUAL SUNFLOWER. Occasional but non-persisting species on well-drained DMP.

*Heliotropium indicum L. GARDEN HELIOTROPE. Occasional on muddy shores; infrequent in DMP.

*Hibiscus lasiocarpos Cav. HAIRY ROSE MALLOW. Occasional in moist depressions of silty DMP; more common along the banks of the oxbows.

Hibiscus militaris Cav. HALBERD-LEAVED ROSE MALLOW. Frequent in wet soil along sloughs.

*Holosteum umbellatum L. JAGGED CHICKWEED. Rare early spring adventive in silty DMP.

*Hordeum pusillum Nutt. LITTLE BARLEY. Abundant early-flowering grass on silty DMP.

*Hypericum punctatum Lam. SPOTTED ST. JOHN'S-WORT. Infrequent in moist, silty DMP.

*Hypericum spathulatum (Spach.) Steud. SHRUBBY ST. JOHN'S-WORT. This handsome flowering shrub is found infrequently on well-drained, stable, sandy DMP.

Impatiens biflora Walt. SPOTTED TOUCH-ME-NOT. Abundant in floodplain woods.

*Ipomoea hederacea (L.) Jacq. IVY-LEAVED MORNING-GLORY. Infrequent in silty DMP.

*Ipomoea lacunosa L. SMALL WHITE MORNING-GLORY. Occasional on moist, silty DMP.

*Ipomoea pandurata (L.) G.F.W. Mey. WILD SWEET POTATO VINE. Primarily a species of old fields; infrequent on established, well-drained DMP, particularly on sloping embankments.

*Iva annua L. MARSH ELDER. Common and aggressive weed in moist, disturbed areas; infrequent in DMP.

*Juncus tenuis Willd. PATH RUSH. Infrequent in silty DMP where the soil has become compacted.

*Juniperus virginiana L. EASTERN RED CEDAR. Infrequent woody invader in sandy DMP.

*Krigia oppositifolia Raf. DWARF DANDELION. Infrequent in moist, sandy DMP.

*Lactuca canadensis L. YELLOW WILD LETTUCE. Infrequent weed in well-drained DMP.

*Lactuca serriola L. PRICKLY LETTUCE. Occasional in disturbed, silty or sandy DMP.

Laportea canadensis (L.) Wedd. WOOD NETTLE. Abundant herb of floodplain woods.

Leersia lenticularis Michx. CATCHFLY GRASS. Infrequent in floodplain woods.

Leersia oryzoides (L.) Swartz. RICE CUT GRASS. Common in floodplain woods and in sloughs.

Leersia virginica Willd. WHITE GRASS. Common in floodplain woods.

Lemna minor L. COMMON DUCKWEED. Abundant on quiet water in old sloughs and oxbows.

*Lepidium virginicum L. COMMON PEPPERGRASS. Abundant but inconspicuous weed in DMP.

*Lespedeza capitata Michx. ROUND-HEADED BUSH CLOVER. Prairie species infrequent wn sandy, well-drained DMP.

*Lespedeza cuneata (Dum.-Cours.) Don. SERICEA LESPEDEZA. Occasional colony-former on established, well-drained DMP.

*Lespedeza repens (L.) Bart. CREEPING BUSH CLOVER. Infrequent creeping species on sandy DMP.

*Lespedeza stipulacea Maxim. KOREAN LESPEDEZA. Abundant, wiry species in every disturbed habitat, including DMP.

*Lespedeza striata (Thunb.) Hook. & Arn. JAPANESE LESPEDEZA. Frequent in sandy DMP.

*Lespedeza violacea (L.) Pers. VIOLET BUSH CLOVER. Occasional on well-drained DMP.

Leucospora multifida Michx. LEUCOSPORA. Common, inconspicuous weed on muddy shores.

Lindernia anagallidea (Michx.) Pennell. SLENDER FALSE PIMPERNEL. Common on muddy shores and in moist depressions.

Lindernia dubia (L.) Pennell. FALSE PIMPERNEL. Common on muddy shores.

Lippia lanceolata Michx. FOG FRUIT. Common in moist, disturbed areas.

Ludwigia alternifolia L. SEED BOX. Occasional along shores.

*Lycopus americanus Muhl. COMMON WATER HOREHOUND. Common in wet situations, including moist, stable DMP.

Lycopus virginicus L. BUGLE WEED. Occasional in floodplain woods.

*Medicago lupulina L. BLACK MEDIC. A rather common weed throughout the project area, but uncommon on silty DMP.

*Medicago sativa L. ALFALFA. Frequently planted to stabilize DMP banks; now widespread in silty DMP.

*Melilotus alba Desr. WHITE SWEET CLOVER. Common species in most disturbed areas; frequent on silty DMP.

*Melilotus officinalis (L.) Lam. YELLOW SWEET CLOVER. Common species in most disturbed areas; frequent on silty DMP.

Menispermum canadense L. MOONSEED. Common vine in floodplain woods.

Mimulus alatus Ait. WINGED MONKEY FLOWER. Common on muddy banks.

*Mollugo verticillatus L. CARPETWEED. Occasional sprawling species on well-drained to xeric DMP.

Morus rubra L. RED MULBERRY. Characteristic tree of moist woods.

*Myosotis virginica L. WHITE FORGET-ME-NOT. Occasional early spring-flowering herb in silty DMP.

Nelumbo lutea (Willd.) Pers. AMERICAN LOTUS. Sometimes present in a few of the oxbows.

Nuphar luteum L. YELLOW POND LILY. Infrequent in shallow water.

Nyssa sylvatica Marsh. SOUR GUM. Occasional tree in floodplain woods.

*Oenothera biennis L. COMMON EVENING PRIMROSE. Abundant weed in disturbed habitats; frequent on drier DMP.

*Oenothera laciniata Hill. CUT-LEAF EVENING PRIMROSE. Common spring-flowering herb in sandy and silty DMP.

*Oxalis stricta L. YELLOW SORREL. Common herb in silty DMP.

Panicum anceps Michx. PANIC GRASS. Common on shores and banks.

*Panicum capillare L. WITCH GRASS. Common on sandy DMP.

*Panicum clandestinum L. DEER-TONGUE GRASS. Infrequent species on sandy DMP.

*Panicum commutatum Schult. BROAD-LEAVED PANIC GRASS. Rare species on silty DMP.

*Panicum dichotomiflorum Michx. KNEE GRASS. Common species in disturbed waste ground; frequent in DMP.

*Panicum lanuginosum Ell. var. lindheimeri (Nash) Fern. PANIC GRASS. Common, apparently well-adapted plant on sandy DMP.

*Panicum latifolium L. PANIC GRASS. Rare species on moist, silty DMP.

Panicum polyanthes Schult. PANIC GRASS. Infrequent species in floodplain woods.

*Panicum rigidulum Bosc. MUNRO GRASS. Occasional species along shores; infrequent in moist DMP.

*Panicum virgatum L. SWITCH GRASS. Characteristic grass in established, stabilized, well-drained, sandy DMP.

Parthenocissus quinquefolia (L.) Planch. VIRGINIA CREEPER. Common vine in the floodplain woods.

*Paspalum ciliatifolium Michx. HAIRY BEAD GRASS. Rare species in very dry, sandy DMP.

Paspalum fluitans (Ell.) Kunth. SWAMP BEAD GRASS. Occasional creeping species in floodplain woods.

*Paspalum laeve Michx. SMOOTH BEAD GRASS. Infrequent grass on DMP embankments.

*Paspalum pubiflorum Rupr. var. glabrum (Vasey) Vasey. BEAD GRASS. Infrequent grass on DMP embankments.

*Penthorum sedoides L. DITCH STONECROP. Common on shores and banks; infrequent in moist depressions in DMP.

Perilla frutescens L. BEEF-STEAK PLANT. An increasing weed in disturbed floodplain woods.

*Phalaris arundinacea L. REED CANARY GRASS. Occasional species in moist, sandy DMP, tending to form colonies.

*Phragmites australis Trin. GIANT REED. Occurs in a single, dense stand on the west side of the channel south of Fayetteville.

*Physalis subglabrata Mack. & Bush. SMOOTH GROUND CHERRY. Rare herb in silty DMP.

*Phytolacca americana L. POKEWEED. Occasional in moist, sandy DMP; also in disturbed floodplain forests.

Pilea pumila (L.) Gray. CLEARWEED. Common in moist woods and on shaded banks.

*Plantago aristata Michx. BRACTED PLANTAIN. Uncommon species in dry, sandy DMP.

*Plantago lanceolata L. BUCKHORN PLANTAIN. Abundant weed in all open, disturbed habitats; occasional in DMP.

*Plantago pusilla Nutt. SMALL PLANTAIN. Infrequent in sandy DMP.

*Plantago rugelii Dcne. RED-STALKED PLANTAIN. Common species of disturbed habitats; occasional in DMP.

*Plantago virginica L. VIRGINIA PLANTAIN. Common in silty or sandy DMP.

*Platanus occidentalis L. SYCAMORE. Characteristic tree of bottomland forests; one of the first woody invaders of moist DMP, sometimes forming thickets.

*Poa annua L. ANNUAL BLUEGRASS. Occasional early season grass in silty DMP.

*Poa compressa L. CANADIAN BLUEGRASS. Common weed of disturbed habitats; occasional in silty or sandy DMP.

*Poa pratensis L. KENTUCKY BLUEGRASS. Common grass of disturbed areas; frequent in silty or sandy DMP.

*Poinsettia dentata (Michx.) Kl. & Garcke. WILD POINSETTIA. Occasional herb in sandy DMP.

*Polygonum achoreum Blake. KNOTWEED. Uncommon and inconspicuous weed of disturbed habitats; rare in silty DMP.

*Polygonum aviculare L. DOORYARD KNOTWEED. Abundant weed in disturbed situations; occasional in silty or sandy DMP.

Polygonum hydropiperoides Michx. MILD WATER PEPPER. Occasional species of muddy shores and banks.

*Polygonum lapathifolium L. NODDING SMARTWEED. Common species in several moist habitats, including moist silty DMP.

*Polygonum pensylvanicum L. PINKWEED. Abundant species in moist habitats; common in moist silty or sandy DMP.

*Polygonum persicaria L. LADY'S THUMB. Occasional species in moist silty or sandy DMP.

*Polygonum punctatum Ell. DOTTED SMARTWEED. Common on muddy shores and banks; occasional in moist, silty DMP.

*Polygonum ramosissimum Michx. BUSHY KNOTWEED. Occasional in very dry, sandy DMP.

Polygonum scandens L. CLIMBING FALSE BUCKWHEAT. Occasional vine in floodplain woods.

Polygonum virginianum L. VIRGINIA KNOTWEED. Common species in floodplain woods and on shaded streambanks.

*Populus deltoides Marsh. COTTONWOOD. Abundant canopy tree in floodplain woods; early woody invader in moist DMP, sometimes forming colonies.

Potentilla simplex Michx. COMMON CINQUEFOIL. Occasional plant in areas adjacent to DMP.

*Prunella vulgaris L. var. lanceolata (Bart.) Fern. CARPENTER WEED. Common species in disturbed, moist habitats; occasional in moist DMP.

*Pycnanthemum tenuifolium Schrad. MOUNTAIN MINT. Common species of old fields; frequent in silty or sandy DMP.

*Pyrrhopappus carolinianus (Walt.) DC. FALSE DANDELION. Occasional species in disturbed areas; sometimes present on silty DMP.

Quercus bicolor Willd. SWAMP WHITE OAK. Occasional tree in floodplain woods and wet bottomlands.

*Quercus imbricaria Michx. SHINGLE OAK. Common tree of woodland borders and floodplain forests; occasional invader in silty DMP.

Quercus macrocarpa Michx. BUR OAK. Frequent canopy tree in bottomland forests.

Quercus michauxii Nutt. BASKET OAK. Occasional tree in wet woods.

*Quercus palustris Muenchh. PIN OAK. Dominant tree in floodplain and bottomland forests; invades moist DMP.

Ranunculus abortivus L. SMALL-FLOWERED CROWFOOT. Common in floodplain woods.

Ranunculus septentrionalis Poir. SWAMP BUTTERCUP. Occasional herb in floodplain woods.

*Rhus copallina L. WINGED SUMAC. Rare invader of silty DMP.

*Rhus glabra L. SMOOTH SUMAC. Occasional shrub of silty and sandy DMP.

*Robinia pseudoacacia L. BLACK LOCUST. Frequent invader in silty and sandy DMP.

Rorippa islandica (Oeder) Borbas var. fernaldiana Butt. & Abbe. MARSH YELLOW CRESS. Occasional small herb on muddy banks and shores.

*Rorippa sessiliflora (Nutt.) Hitchc. SESSILE-FLOWERED YELLOW CRESS. Common species on muddy banks and shores; found in moist depressions in DMP.

*Rosa multiflora Thunb. MULTIFLORA ROSE. Common shrub in old fields and thickets; sporadic in silty or sandy DMP.

*Rubus allegheniensis Porter. COMMON BLACKBERRY. Common arching shrub in old fields and thickets; occasional in silty or sandy DMP.

*Rubus flagellaris Willd. COMMON DEWBERRY. Common prostrate shrub in old fields and thickets; occasional in silty or sandy DMP.

*Rubus occidentalis L. WILD RASPBERRY. Rare shrub in silty DMP.

*Rudbeckia hirta L. BLACK-EYED SUSAN. Common species in old fields; occasional in well-drained, stabilized DMP.

Ruellia strepens L. SMOOTH RUELLIA. Uncommon herb in floodplain woods.

*Rumex acetosella L. SOUR DOCK. Common weed in open, disturbed areas; occasional in silty or sandy DMP.

*Rumex altissimus Wood. PALE DOCK. Infrequent herb in moist, silty DMP.

*Rumex crispus L. CURLY DOCK. Common weed in disturbed habitats; occasional in DMP.

*Rumex obtusifolius L. BITTER DOCK. Occasional in moist, disturbed areas; infrequent in DMP.

*Salix amygdaloides Anderss. PEACH-LEAVED WILLOW. Infrequent tree in stable sandy DMP.

*Salix interior Rowlee. SANDBAR WILLOW. Characteristic woody species on sandy DMP; also common on sand bars.

*Salix nigra Marsh. BLACK WILLOW. Common tree on shores, sandbars, and in floodplain woods; common in DMP.

*Salix rigida Muhl. HEART-LEAVED WILLOW. Infrequent small tree in sandy DMP.

Sambucus canadensis L. ELDERBERRY. Occasional species in floodplain woods and fields.

Sanicula canadensis L. BLACK SNAKEROOT. Occasional herb in floodplain woods.

Sassafras albidum (Nutt.) Nees. SASSAFRAS. Common small tree in a variety of habitats, but not observed in DMP.

Saururus cernuus L. LIZARD'S TAIL. Occasional species in bottomland forests.

*Schizachyrium scoparium (Michx.) Nash. LITTLE BLUESTEM. Occasional prairie species on stabilized sandy DMP.

Scirpus atrovirens Willd. DARK GREEN BULRUSH. Occasional species on shores and banks.

Scutellaria lateriflora L. SIDE-FLOWERED SKULLCAP. Common species in floodplain forests and woods adjacent to the oxbows.

*Senecio glabellus Poir. BUTTERWEED. Occasional weed in old fields; rare in moist silty DMP.

*Setaria faberi Herrm. GIANT FOXTAIL. Abundant weed in disturbed habitats; occasional in DMP.

*Setaria lutescens (Weigel) Hubb. YELLOW FOXTAIL. Common weed in disturbed habitats; occasional in DMP.

*Setaria viridis (L.) Beauv. Occasional weed in project area; uncommon in DMP.

*Sibara virginica (L.) Rollins. VIRGINIA ROCK CRESS. Common early spring-flowering weed in silty DMP.

Sicyos angulatus L. BUR CUCUMBER. Common vine in floodplain forests.

*Sida spinosa L. PRICKLY SIDA. Common weed in moist, disturbed habitats; occasional in DMP.

*Silene antirrhina L. SLEEPY CATCHFLY. Common invader in silty or sandy DMP.

Smilax bona-nox L. CATBRIER. Occasional prickly vine in moist woods.

Smilax hispida Muhl. BRISTLY CATBRIER. Occasional bristly vine in moist woods.

Smilax rotundifolia L. Common prickly vine in bottomland woods.

Solanum americanum Mill. BLACK NIGHTSHADE. Occasional herb in floodplain woods.

*Solanum carolinense L. HORSE NETTLE. Occasional weed in disturbed areas; infrequent in sandy DMP.

*Solidago canadensis L. TALL GOLDENROD. Abundant species in old fields and disturbed areas; common in silty DMP.

Solidago gigantea Ait. LATE GOLDENROD. Occasional species in floodplain forests.

*Solidago graminifolia (L.) Salisb. GRASS-LEAVED GOLDENROD. Occasional in old fields; uncommon in well-drained, stabilized DMP.

*Solidago nemoralis Ait. OLD FIELD GOLDENROD. Infrequent in silty DMP.

*Sorghastrum nutans (L.) Nash. INDIAN GRASS. Well established grass on stabilized, well-drained, sandy DMP. It may be the dominant species in some areas.

*Sorghum halepense (L.) Pers. JOHNSON GRASS. Coarse weed in open, disturbed areas; infrequent in DMP.

*Specularia perfoliata (L.) A. DC. VENUS' LOOKING-GLASS. Occasional herb in silty DMP.

*Spermacoce glabra Michx. SMOOTH BUTTONWEED. Common on muddy shores and banks; infrequent in moist DMP.

Spirodela polyrhiza (L.) Schleiden. GREAT DUCKWEED. Occasional in shallow standing water.

*Sporobolus vaginiflorus (Torr.) Wood. SHEATHED RUSH GRASS. Infrequent in dry, sandy DMP.

Stachys tenuifolia Willd. SMOOTH HEDGE NETTLE. Common herb in floodplain woods.

Stellaria media (L.) Cyrillo. COMMON CHICKWEED. Common weed in old fields.

*Strophostyles helvola (L.) Ell. TRAILING WILD BEAN. Occasional sprawling herb in sandy DMP, sometimes forming extensive colonies.

*Strophostyles leiosperma (Torr. & Gray) Piper. SMALL WILD BEAN. Occasional sprawling herb in sandy DMP.

Symphoricarpos orbiculatus Moench. CORAL BERRY. Infrequent in floodplain woods.

*Taraxacum officinale Weber. DANDELION. Abundant in all weedy habitats; occasional in DMP.

Teucrium canadense L. WILD GERMANDER. Occasional herb in moist woods.

*Torilis japonica (Houtt.) DC. HEDGE PARSLEY. Uncommon species in sandy DMP.

*Toxicodendron radicans (L.) Kuntze. POISON IVY. Abundant, aggressive vine in woods, fields, and disturbed areas; occasional on silty and sandy DMP.

*Tradescantia ohiensis Raf. SPIDERWORT. Occasional in sandy DMP.

Tradescantia subaspera Ker. BROAD-LEAVED SPIDERWORT. Infrequent species in floodplain woods.

*Tridens flavus (L.) Hitchcock. PURPLE-TOP. Common weedy grass in old fields and on sandy DMP.

*Trifolium campestre Schreb. LOW HOP CLOVER. Occasional species in silty or sandy DMP.

*Trifolium pratense L. RED CLOVER. Common species in old fields and in disturbed areas; infrequent in DMP.

*Trifolium repens L. WHITE CLOVER. Common species in old fields and in disturbed areas; infrequent in DMP.

*Typha latifolia L. COMMON CAT-TAIL. Common species of moist or wet areas; rare in wet depressions in DMP.

Ulmus americana L. AMERICAN ELM. Common tree in floodplain woods, although many have fallen victim to Dutch Elm Disease.

*Ulmus rubra Muhl. SLIPPERY ELM. Common tree in floodplain woods; also occasional in DMP.

*Valerianella radiata (L.) Dufr. CORN SALAD. Infrequent herb in moist, silty DMP.

*Verbascum blattaria L. MOTH MULLEIN. Rare herb in sandy DMP.

*Verbascum thapsus L. WOOLLY MULLEIN. Common weed in disturbed habitats; occasional in DMP.

*Verbena hastata L. BLUE VERVAIN. Occasional species in moist, sandy DMP.

*Verbena urticifolia L. WHITE VERVAIN. Occasional in floodplain woods; rare in moist DMP.

*Vernonia missurica Raf. MISSOURI IRONWEED. Infrequent in stabilized, sandy DMP.

*Veronica arvensis L. CORN SPEEDWELL. Abundant weed of disturbed areas; occasional in silty DMP.

*Viola rafinesquii Greene. JOHNNY-JUMP-UP. Common early-flowering herb in silty DMP.

Viola sororia Willd. WOOLLY BLUE VIOLET. Occasional spring-flowering herb in bottomland forests.

Viola striata Ait. CREAM VIOLET. Occasional species in bottomland woods.

*Vitis cinerea Engelm. WINTER GRAPE. Common vine in floodplain forests; rare in moist DMP.

Vitis palmata Vahl. CATBIRD GRAPE. Occasional vine in woods bordering oxbows.

*Vitis vulpina L. FROST GRAPE. Occasional vine in floodplain woods; infrequent in moist DMP.

*Vulpia octoflora (Walt.) Rydb. SIX-WEEKS FESCUE. Common early grass in sandy DMP.

*Xanthium strumarium L. COCKLEBUR. Common weed in disturbed soil; infrequent on moist, sandy DMP.

Annotated List of Fauna

In the following lists, all species of birds, mammals, amphibians, and reptiles observed in the study area are listed. No attempts were made to record abundance of each species, but only occurrence. Under the birds, however, the status is given indicating whether the species is a year round resident (R), a winter resident (WR), a summer resident (SR), or a migrant (M).

Nomenclature for birds follows Bull and Farrand (1977), while that for mammals follows Hoffmeister and Mohr (1972). Smith (1961) is used for nomenclature of amphibians and reptiles. The symbol DMP stands for dredge material placement.

Birds

Gavia immer Brunnich. COMMON LOON. M. Uncommon in oxbows.

Ardea herodias Ridgeway. GREAT BLUE HERON. R-M. Common in oxbows.

Butorides striatus Linnaeus. GREEN HERON. SR-M. Common in oxbows and in bottomland woods.

Anas platyrhynchos Linnaeus. MALLARD. WR-M. Common around oxbows.

Anas rubripes Breswter. BLACK DUCK. WR-M. Rare around oxbows.

Aix sponsa Linnaeus. WOOD DUCK. SR-M. Common around oxbows and bottomland forests.

Cathartes aura Linnaeus. TURKEY VULTURE. SR-M. Observed flying over old fields, DMP sites, and bottomland forests.

Buteo jamaicensis Gmelin. RED-TAILED HAWK. R. Common over old fields, DMP sites, and bottomland forests.

Falco sparverius Linnaeus. KESTREL. R. Common over old fields; seen once over a DMP site.

Colinus virginianus Linnaeus. BOBWHITE. R. Occasional in old fields; uncommon in DMP sites.

Fulica americana Gmelin. AMERICAN COOT. WR-M. Common around oxbows.

Charadrius vociferus Linnaeus. KILLDEER. R. Common in old fields, dredge material placement sites, and bottomland forests. The most common species of bird in open DMP sites.

Larus argentatus Pontoppidan. HERRING GULL. M-WR. Common around oxbows.

Larus delawarensis Ord. RING-BILLED GULL. M-WR. Occasional around oxbows.

Zenaida macroura Linnaeus. MOURNING DOVE. R. Uncommon in old fields and in DMP sites.

Coccyzus americanus Linnaeus. YELLOW-BILLED CUCKOO. SR-M. Occasional in bottomland forests; uncommon in old fields.

Strix varia Barton. BARRED OWL. R. Heard once in a bottomland forest.

Chordeiles minor (Forster). COMMON NIGHTHAWK. SR-M. Common in old fields; occasional in DMP sites.

Megaceryle alcyon Linnaeus. BELTED KINGFISHER. R-M. Uncommon around oxbows.

Colaptes auratus Bangs. YELLOW-SHAFTED FLICKER. R-M. Occasional in bottomland forests.

Dryocopus pileatus Linnaeus. PILEATED WOODPECKER. R. Uncommon in bottomland woods.

Centurus carolinus Boddaert. RED-BELLIED WOODPECKER. R. Common in bottomland forests.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER. R-M. Common in bottomland woods.

Sphyrapicus varius (Linnaeus). YELLOW-BELLIED SAPSUCKER. WR-M. Rare in bottomland forests.

Picoides villosus (Linnaeus). HAIRY WOODPECKER. R. Rare in bottomland forests.

Picoides pubescens (Linnaeus). DOWNY WOODPECKER. R. Occasional in bottomland forests.

Tyrannus tyrannus Linnaeus. EASTERN KINGBIRD. SR-M. Occasional in old fields; uncommon in DMP sites.

Myiarchus crinitus Bangs. GREAT CRESTED FLYCATCHER. SR-M. Uncommon in bottomland forests.

Contopus virens Linnaeus. EASTERN WOOD PEWEE. SR-M. Common in bottomland forests.

Stelgidopteryx ruficollis Audubon. ROUGH-WINGED SWALLOW. SR-M. Uncommon around oxbows.

Hirundo rustica. BARN SWALLOW. SR-M. Occasional over old fields and DMP sites.

Cyanocitta cristata Linnaeus. BLUE JAY. R-M. Common in all habitats in the project area.

Corvus brachyrhynchos Brehem. COMMON CROW. R. Common in all habitats in the project area.

Parus carolinensis extremus Todd & Sutton. CAROLINA CHICKADEE. R. Common in bottomland forests.

Parus bicolor Linnaeus. TUFTED TITMOUSE. R. Common in bottomland forests.

Sitta carolinensis Oberholser. WHITE-BREASTED NUTHATCH. R. Occasional in bottomland forests and around oxbows.

Thryothorus ludovicianus Latham. CAROLINA WREN. R. Uncommon in bottomland forests.

Turdus migratorius (L.). ROBIN. R-M. Common in all habitats except around oxbows.

Polioptila caerulea Linnaeus. BLUE-GRAY GNATCATCHER. SR-M. Occasional in bottomland forests.

Regulus satrapa Lichtenstein. GOLDEN-CROWNED KINGLET. M-WR. Rare in bottomland forests.

Sturnus vulgaris Linnaeus. STARLING. R. Common in old fields.

Vireo olivaceus (L.). RED-EYED VIREO. SR-M. Occasional in bottomland forests.

Prothonotaria citrea Boddaert. PROTHONOTARY WARBLER. SR-M. Common in bottomland forests and around oxbows.

Seiurus noveboracensis Gmelin. NORTHERN WATERTHRUSH. M. Occasional in bottomland forests and around oxbows.

Geothlypis trichas Linnaeus. YELLOWTHROAT. SR. Rare in bottomland orests; occasional in old fields and in DMP sites.

Passer domesticus Linnaeus. HOUSE SPARROW. R. Occasional in old fields and in DMP sites.

Sturnella magna argutula Bangs. EASTERN MEADOWLARK. R-M. Common in old fields and DMP sites.

Agelaius phoeniceus. RED-WINGED BLACKBIRD. R-M. Common in all habitats in the project area.

Icterus spurius Linnaeus. ORCHARD ORIOLE. SR. Occasional in one DMP site.

Quiscalus quiscula versicolor Vieillot. COMMON GRACKLE. R-M. Common in old fields and DMP sites.

Molothrus ater Boddaert. BROWN-HEADED COWBIRD. R-M. Occasional in all habitats in the project area except around oxbows.

Piranga olivacea Gmelin. SCARLET TANAGER. SR. Uncommon in bottomland forests.

Cardinalis cardinalis Linnaeus. CARDINAL. R. Common in all habitats in the project area.

Passerina cyanea Linnaeus. INDIGO BUNTING. SR-M. Occasional in all habitats in project area.

Spinus tristis Linnaeus. AMERICAN GOLDFINCH. R-M. Common in old fields and in DMP sites; rare around oxbows.

Pipilo erythrophthalmus Linnaeus. RUFOUS-SIDED TOWHEE. SR-M. Occasional in old fields and in DMP sites.

Junco hyemalis Linnaeus. DARK-EYED JUNCO. WR-M. Common in all habitats in the project area.

Spizella passerina Bechsteir. CHIPPING SPARROW. SR. Occasional in old fields and in DMP sites.

Spizella pusilla Wilson. FIELD SPARROW. R-M. Common in old fields and in DMP sites.

Zonotrichia albicollis Gmelin. WHITE-THROATED SPARROW. WR-M. Occasional in all habitats in the project area.

Melospiza melodia euphonia Wotmore. SONG SPARROW. R-M. Common in all habitats in the project area.

Amphibians and Reptiles

Ambystoma texanum (Matthes). SMALL-MOUTHED SALAMANDER. Common in bottomland forests and around oxbows.

Bufo americanus Holbrook. AMERICAN TOAD. Common in all moist habitats.

Bufo woodhousei fowleri Hinckley. FOWLER'S TOAD. Common in all moist habitats.

Acris crepitans blanchardi Harper. BLANCHARD'S CRICKET FROG. Common in all moist habitats.

Psedacris triseriatus (Wied). WESTERN CHORUS FROG. Common in all moist habitats.

Hyla crucifer Wied. NORTHERN SPRING PEEPER. Common in all moist habitats.

Hyla versicolor LeConte. GRAY TREEFROG. Occasional in all moist habitats.

Rana catesbeiana Shaw. BULLFROG. Common in all moist habitats.

Rana clamitans melanota (Rafinesque). GREEN FROG. Occasional around oxbows.

Rana pipiens sphenocephala Cope. SOUTHERN LEOPARD FROG. Common in all moist habitats.

Chelydra serpentina (Linnaeus). SNAPPING TURTLE. Occasional in all moist habitats.

Terrapene carolina (Linnaeus). EASTERN BOX TURTLE. Common in moist habitats.

Pseudemys scripta elegans (Wied). RED-EARED TURTLE. Common in all moist habitats.

Trionyx muticus LeSueur. SMOOTH SOFTSHELL TURTLE. Occasional in moist habitats.

Trionyx spinifer LeSueur. EASTERN SPINY SOFTSHELL TURTLE. Uncommon in moist habitats.

Coluber constrictor flaviventris Say. BLUE RACER. Common in all habitats in the project area; one specimen seen in DMP site.

Elaphe obsoleta obsoleta Say. BLACK RAT SNAKE. Occasional in moist habitats except DMP sites.

Thamnophis sauritus proximus Say. WESTERN RIBBON SNAKE. Uncommon in moist habitats.

Thamnophis sirtalis sirtalis Linnaeus. EASTERN GARTER SNAKE. Occasional in old fields.

Mammals

Didelphis marsupialis Linnaeus. OPOSSUM. Common in all habitats in the project area.

Scalopus aquaticus (Linnaeus). EASTERN MOLE. Common in old fields; occasional in DMP sites.

Procyon lotor (Linnaeus). RACCOON. Common in all habitats in the project area.

Mephitis mephitis (Schreber). STRIPED SKUNK. Common in all habitats in the project area.

Marmota monax (Linnaeus). WOODCHUCK. Common in all habitats in the project area.

Tamias striatus (Linnaeus). EASTERN CHIPMUNK. Common in bottomland forests.

Sciurus carolinensis Gmelin. EASTERN GRAY SQUIRREL. Occasional in wooded habitats.

Sciurus niger Linnaeus. EASTERN FOX SQUIRREL. Common in wooded habitats.

Castor canadensis Kuhl. BEAVER. Occasional around oxbows.

Peromyscus maniculatus (Wagner). DEER MOUSE. Common in old fields and in DMP sites.

Peromyscus leucopus (Rafinesque). WHITE-FOOTED MOUSE. Common in all habitats in the project area.

Ondatra zibethicus (Linnaeus). MUSKRAT. Common in all moist habitats.

Sylvilagus floridanus (Allen). EASTERN COTTONTAIL. Common in all habitats in the project area.

Odocoileus virginianus (Zimmerman). WHITE-TAILED DEER. Common in all habitats in the project area.

Recommendations for Future Dredge Material Placement Sites

With the necessity to deposit dredge material during future dredging operations, the following recommendations are made:

1) Avoid dredge placement in the areas of the oxbows and their associated bottomland forests. These areas are excellent wildlife habitat and should be managed as such.

2) Select existing dredge placement areas for future deposits. If necessary, each of the twelve areas circumscribed in this study could be used since none has unique natural qualities. It is theorized that a similar assemblage of plants which has developed following the first dredging operation will redevelop following new placement of materials. If not all twelve areas are needed, then they should be filled in priority order. In accordance with recommendations given later in this report, areas 1, 2, 8, and 9 should be filled only if the other eight areas are filled to capacity.

When placement occurs, care should be taken to smooth the areas and to avoid steep embankments. Where slopes are necessitated, they should be quickly seeded with Coronilla varia (crown vetch) which seems to be the best soil binder available. Revetment of the slopes should be undertaken as soon as possible to impede erosion of the banks into the river channel.

3) The DMP which will result from dredging of the river between the ICG railroad bridge and the new Illinois Route 13 highway bridge should be restricted to the west side of the river where secondary floodplain woods of poor quality occur. The east side of the river has a 100% cover of well-established vegetation and should not be altered.

Revegetation Recommendations

After studying the conditions of the dredge materials through each of the seasons between Fayetteville and New Athens, and following thorough search of the literature, the contractor makes the following recommendations and alternatives to revegetation of the areas.

On areas which have a grade of 5% or more, plant species with ground-holding capacities are required. Although several species which will grow in the area qualify as soil binders, first priorities should be given to members of the legume family because of their ability to return nitrogen to the soil.

The most useful species for the areas with 5% grade or more is Coronilla varia, the crown vetch. This species has been planted previously in the DMP between Fayetteville and New Athens and has proved to be extremely efficient in holding the soil in place and in building turf in the eight years it has had to establish itself. Crown vetch establishes a cover of 100% and is less susceptible to erosion than any other species.

Some other legumes are suitable for slopes, but do not usually produce the continuous cover provided by crown vetch. These secondary species include Medicago sativa (alfalfa), Melilotus officinalis (yellow sweet clover), and Melilotus

alba (white sweet clover). Non-leguminous, soil-binding plants which could be used advantageously on the slopes are Festuca pratensis (tall fescue), Bromus inermis (smooth brome), and the attractive Phalaris arundinacea (reed canary grass).

On the extensive flat deposit sites, several recommendations can be made, depending in part on the composition of the DMP.

1) One alternative is not to revegetate at all, but let chance dispersal and establishment of vegetation prevail. This is essentially what has taken place since 1972 on the flat deposit sites between Fayetteville and New Athens. Since 1972, vegetational succession has been active so that eight years later, several disclimax communities have developed. While these communities, for the most part, are comprised of "weedy" elements of the flora, they nonetheless are providing cover and organic matter which sets the scene for a long term series of successional stages.

Areas with a high silt (and low sand) content have revegetated naturally in the quickest time. Some areas, such as in DMP site 8, have several zones with 100% cover. In areas with more sand in the DMP, the natural revegetation and succession have been slowed, partly because of the nature of the deposit material, and partly because of the continued disruption of natural successional processes by ORV.

Should revegetation by man be employed, it would be essential to restrict ORV use of the areas so that the introduced plant species would have a chance to become established.

2) An alternative for the revegetation of the dredge material is to sow seeds of appropriate species in the deposit sites. The choice of plants depends upon the nature of the dredge material.

Sites in which the composition of the dredge material is 75% silt or more, tall fescue (Festuca pratensis), smooth brome (Bromus inermis), and Korean lespedeza (Lespedeza stipulacea) are the recommended species.

In areas with a good balance of sand and silt, native prairie species should be planted since they seem to establish themselves well in this situation. This includes big bluestem (Andropogon gerardii), little bluestem (Schizachyrium scoparium), Indian grass (Sorghastrum nutans), and round-headed bush clover (Lespedeza capitata).

In the most xeric sites where the composition of the dredge material is at least 75% sand, species that show a strong tolerance to sand should be planted. Recommended species are hairy brome grass (Bromus tectorum), hairy panic grass (Panicum lanuginosum), sedge (Cyperus filiculmis), and wire grass (Aristida oligantha).

Seed sources of crown vetch, alfalfa, yellow sweet clover, tall fescue, smooth brome, canary grass, hairy brome grass, and Korean lespedeza are readily available from many commercial sources. Several companies dealing with American prairie species can provide seeds of big bluestem, little bluestem, Indian grass,

and round-headed bush clover. For the sedge (Cyperus filiculmis), for wire grass, and for hairy panic grass, native seed source may be all that is available.

Aesthetic Potential of Dredge Material Placement Sites

Several of the DMP sites may have a variety of aesthetic and recreational potential. The following possibilities exist:

1) Development of one of the DMP sites as a recreational area. The area recommended for this purpose is DMP site number one, located on the east side of the river channel immediately south of the Fayetteville bridge. This area has been selected because of its sizeable acreage and its relative accessibility.

At present, the area has a lower terrace which borders the river channel. A dirt-sand road currently runs along the entire length of this terrace on its eastern side. The upper terrace, where most of the silty and sandy dredge material occurs, extends for more than one mile north to south and nearly one-half mile east to west.

For easy access for fishing from the lower terrace, a wooden boardwalk could be constructed which would parallel the river channel for the entire length of the recreation area. Wooden staircases every 500 feet or so could extend from the upper terrace to the boardwalk on the lower terrace.

Because of the large size of the upper terrace, several developments could be made. A campground and a picnic area could be accommodated easily. A softball field, horseshoe pits, and a children's play area could fit in nicely with the campground and/or picnic area.

A restored Illinois sand prairie with a self-guiding nature trail winding through it would be the first of its kind in the country. Natural sand prairies in Illinois which occur along the Illinois River in the vicinity of Bath and near the Mississippi River near Fulton are unique habitats which harbor an interesting and unusual flora. Seeds of the species characteristic of these areas could be gathered and carefully germinated for planting in the restored prairie. Some of the plants characteristic of an Illinois sand prairie are little bluestem, June grass, hairy grama grass, poppy mallow, false heather, and bladderpod.

If deemed desirable or appropriate, one of the DMP sites could be used for a sanctioned ORV area. The nature of the dredge material provides suitable substrate for ORV usage. DMP site number nine is recommended as an ORV area for the following criteria:

1) Sandy substrate is not conducive to revegetation. In the eight years that deposit site number nine has been available for colonization by plants, very sparse natural vegetation has developed.

2) Extent of the area is sufficient for a sizeable number of ORV's.

3) Area is reasonably isolated from population centers, being located approximately midway between Fayetteville and New Athens.

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It was prepared by searching appropriate biological journals and books which may contain information concerning the biota of the area. In addition, unpublished theses and dissertations in Botany and Zoology at Southern Illinois University, Carbondale, were checked.

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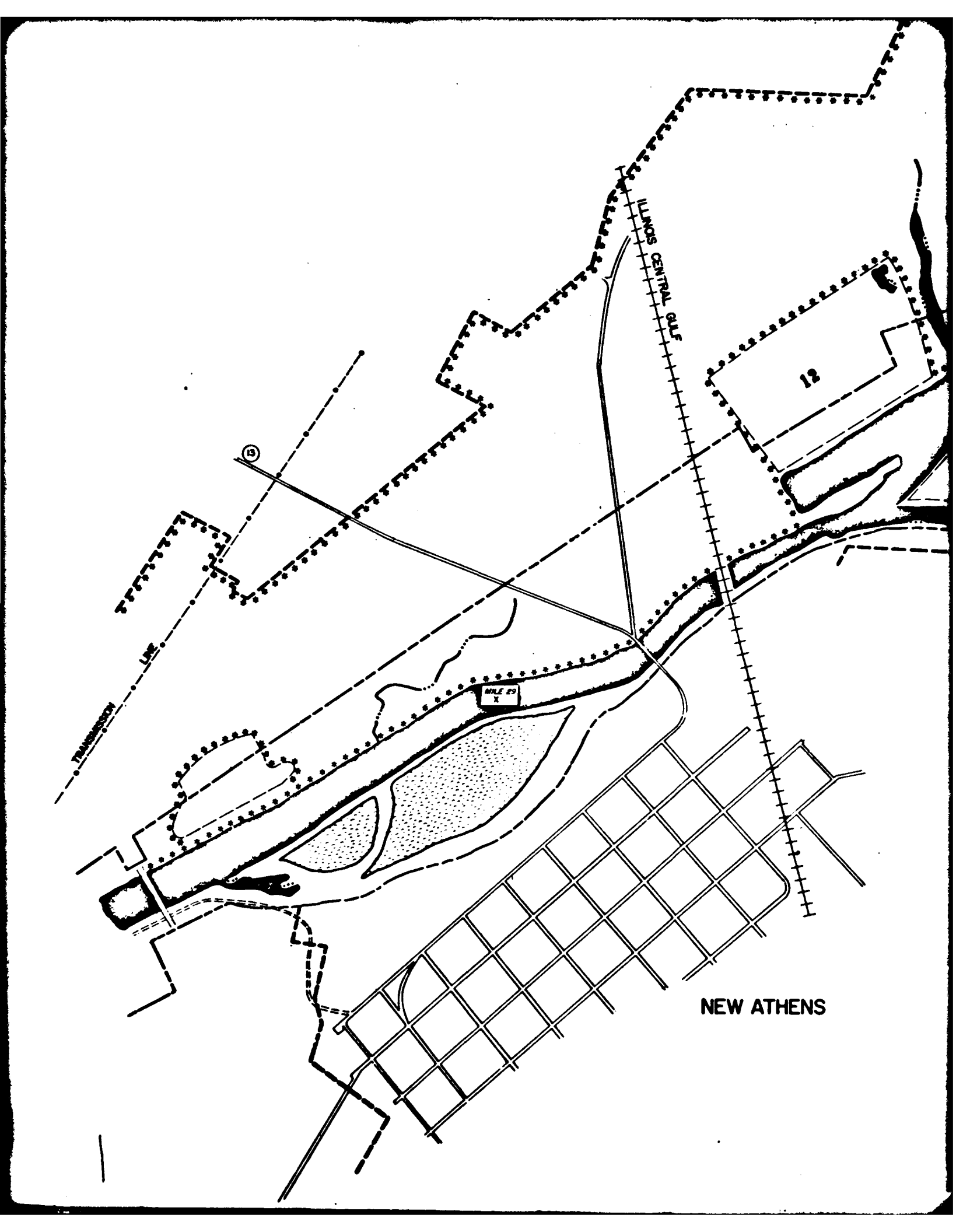
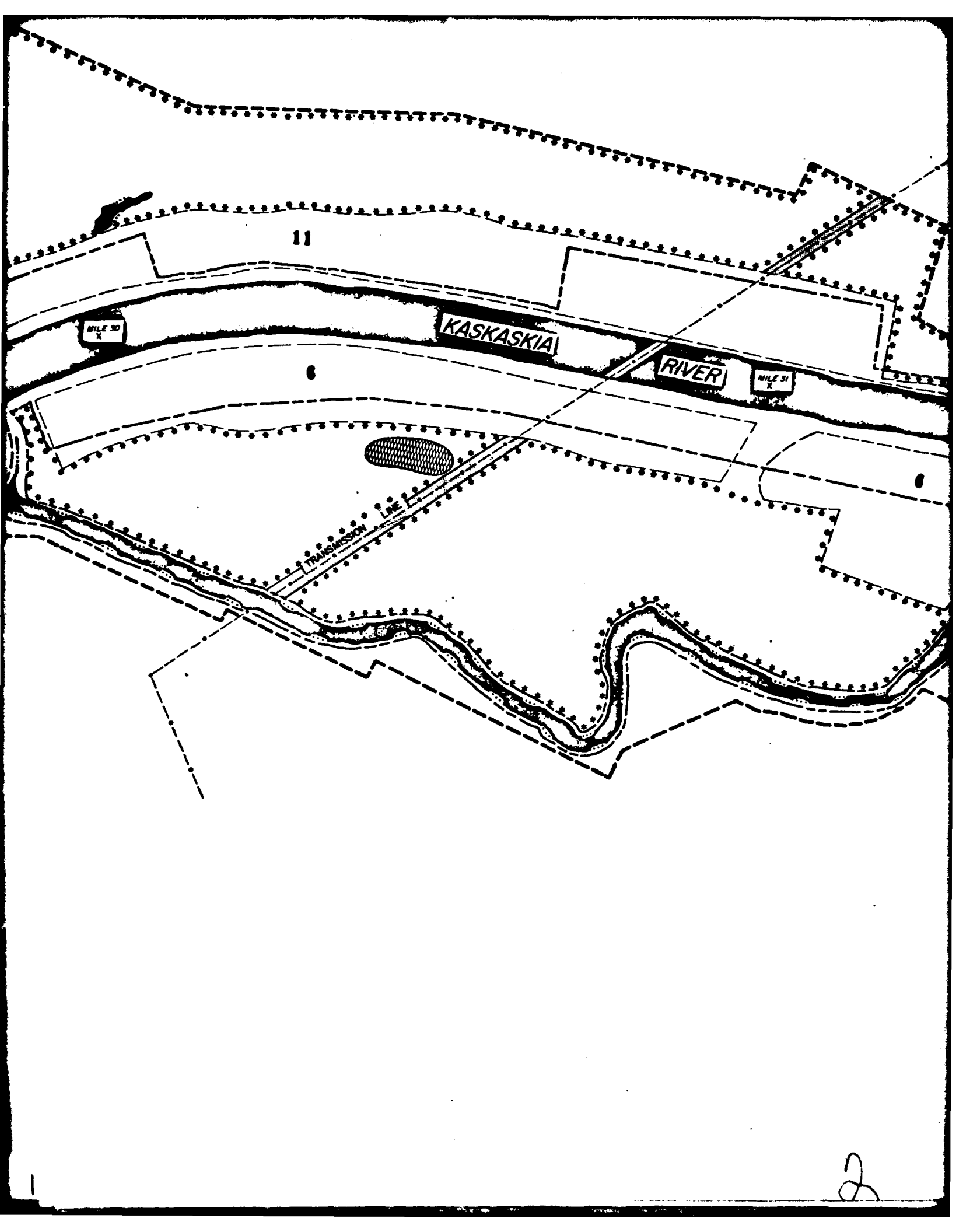

ILLINOIS CENTRAL GULF
12
13
TRANSMISSION LINE
MILE 29
NEW ATHENS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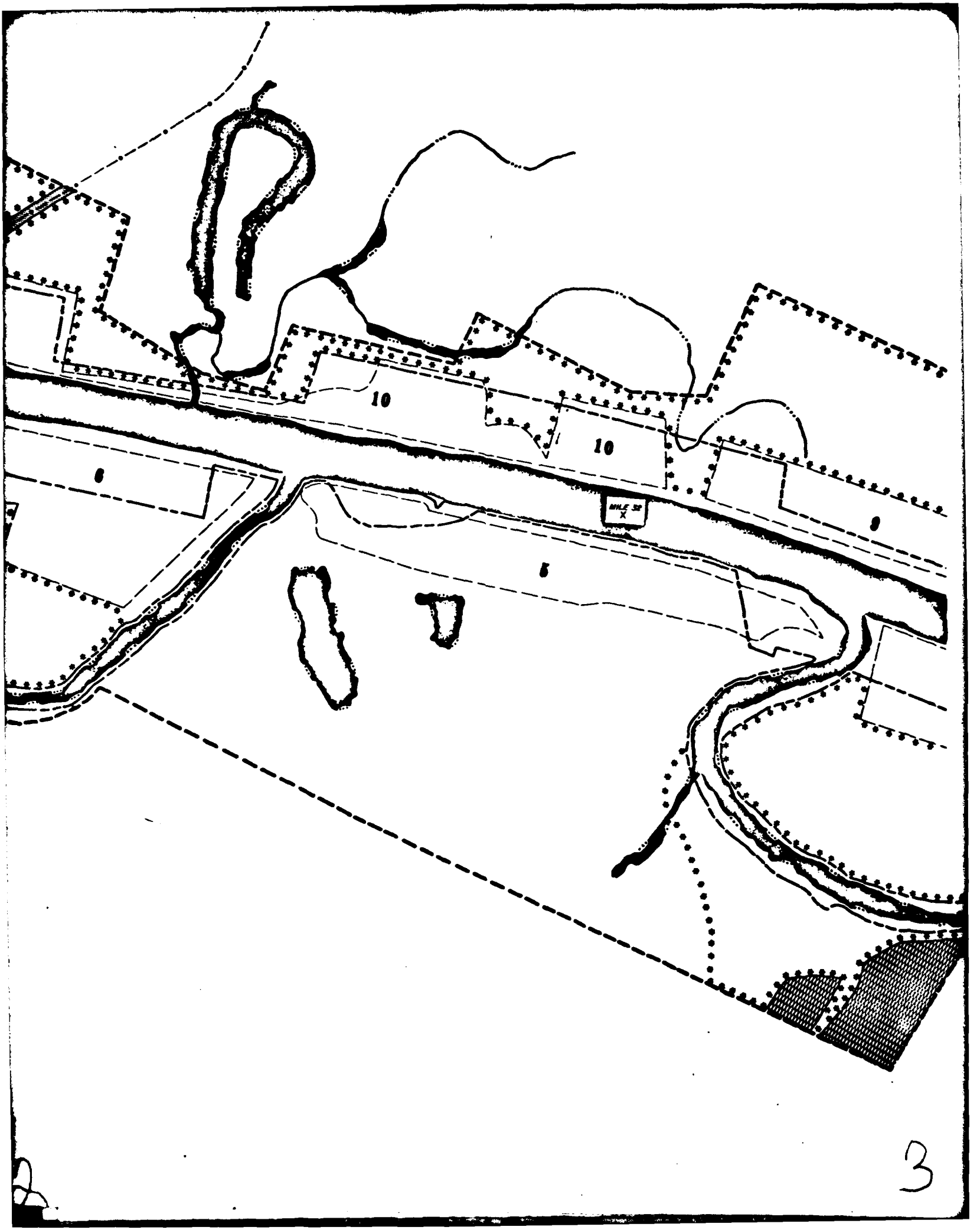
MILE 30
KASKASKIA
RIVER
MILE 31
6
6
TRANSMISSION LINE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8
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MILE 32
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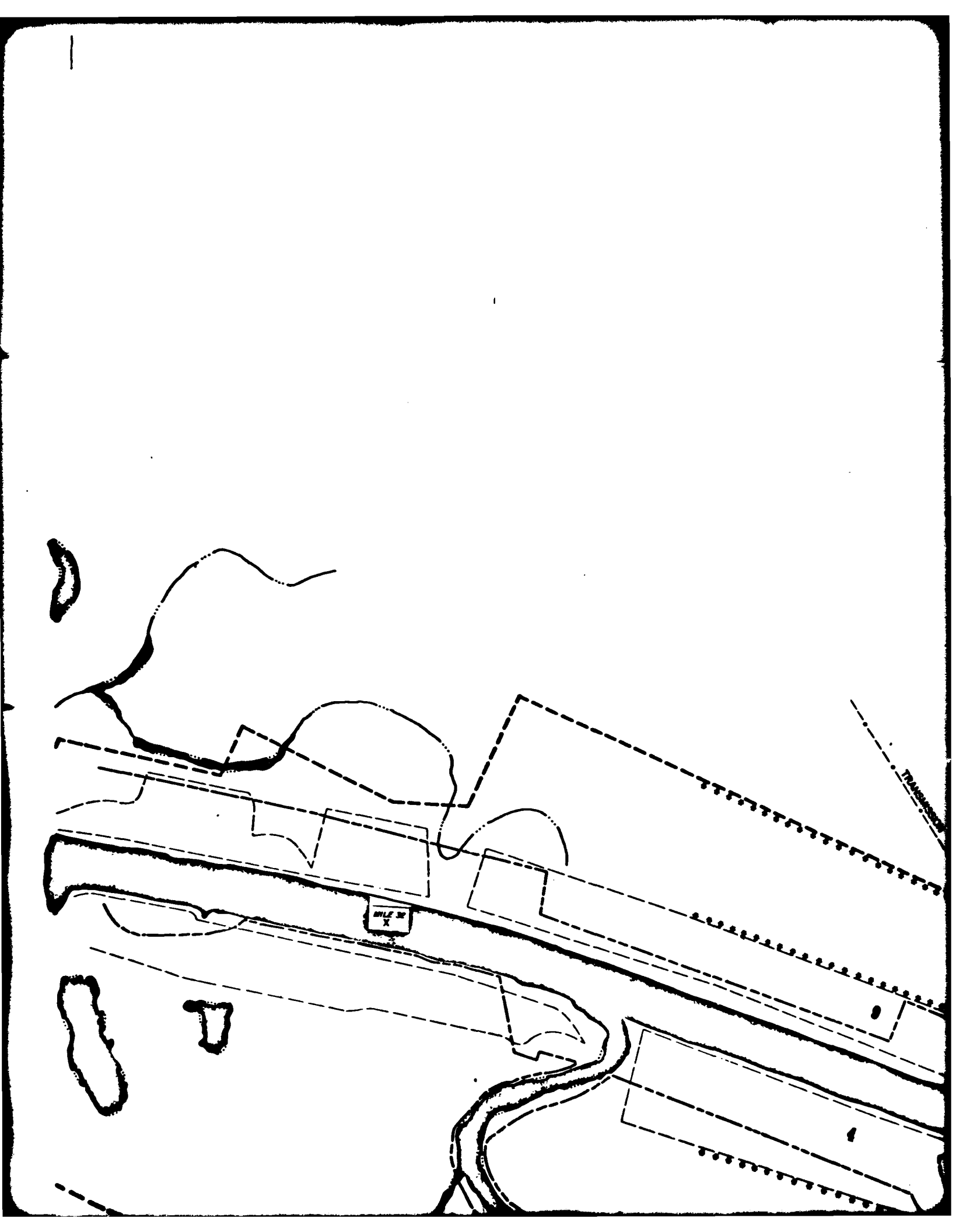
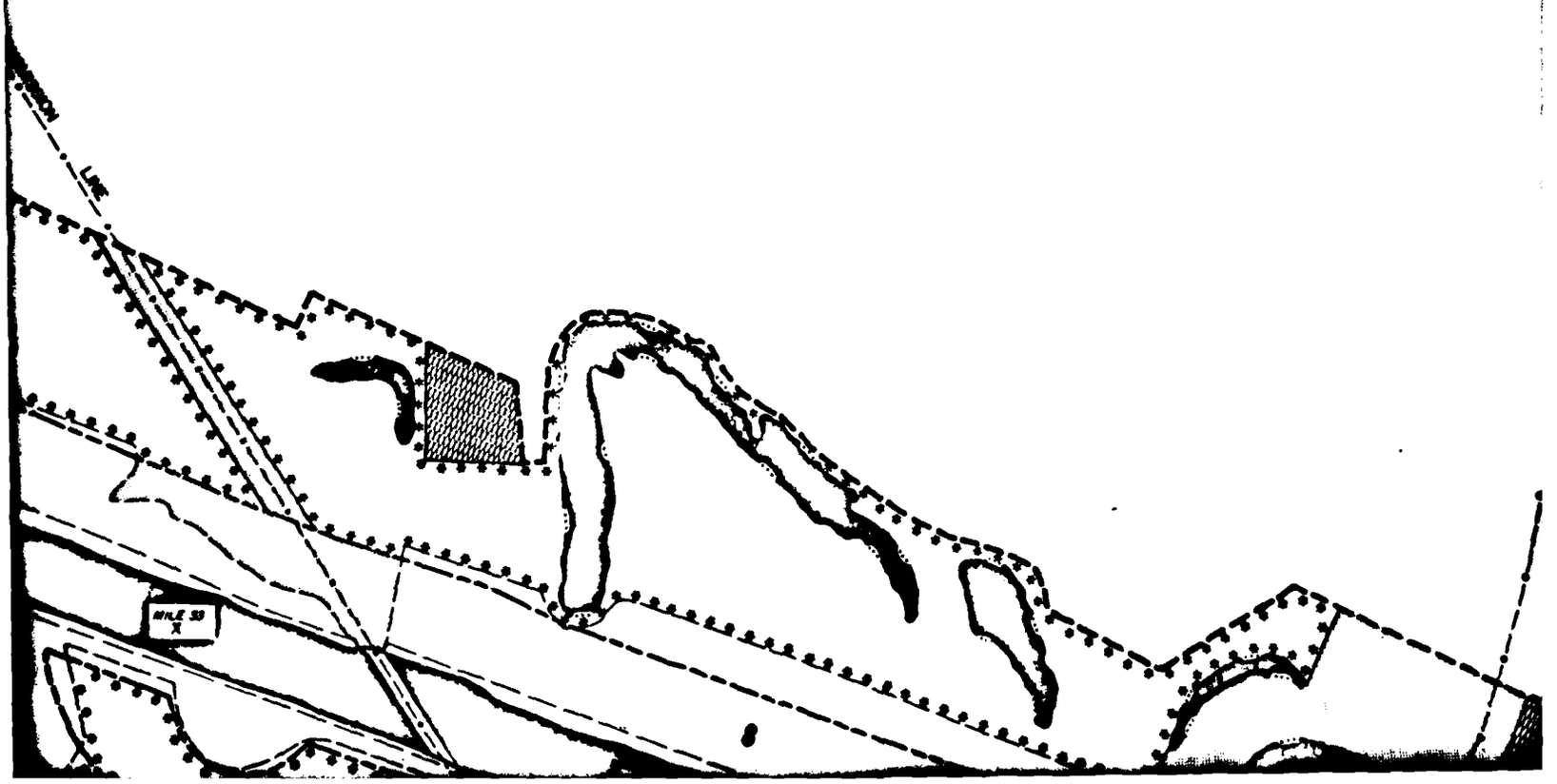
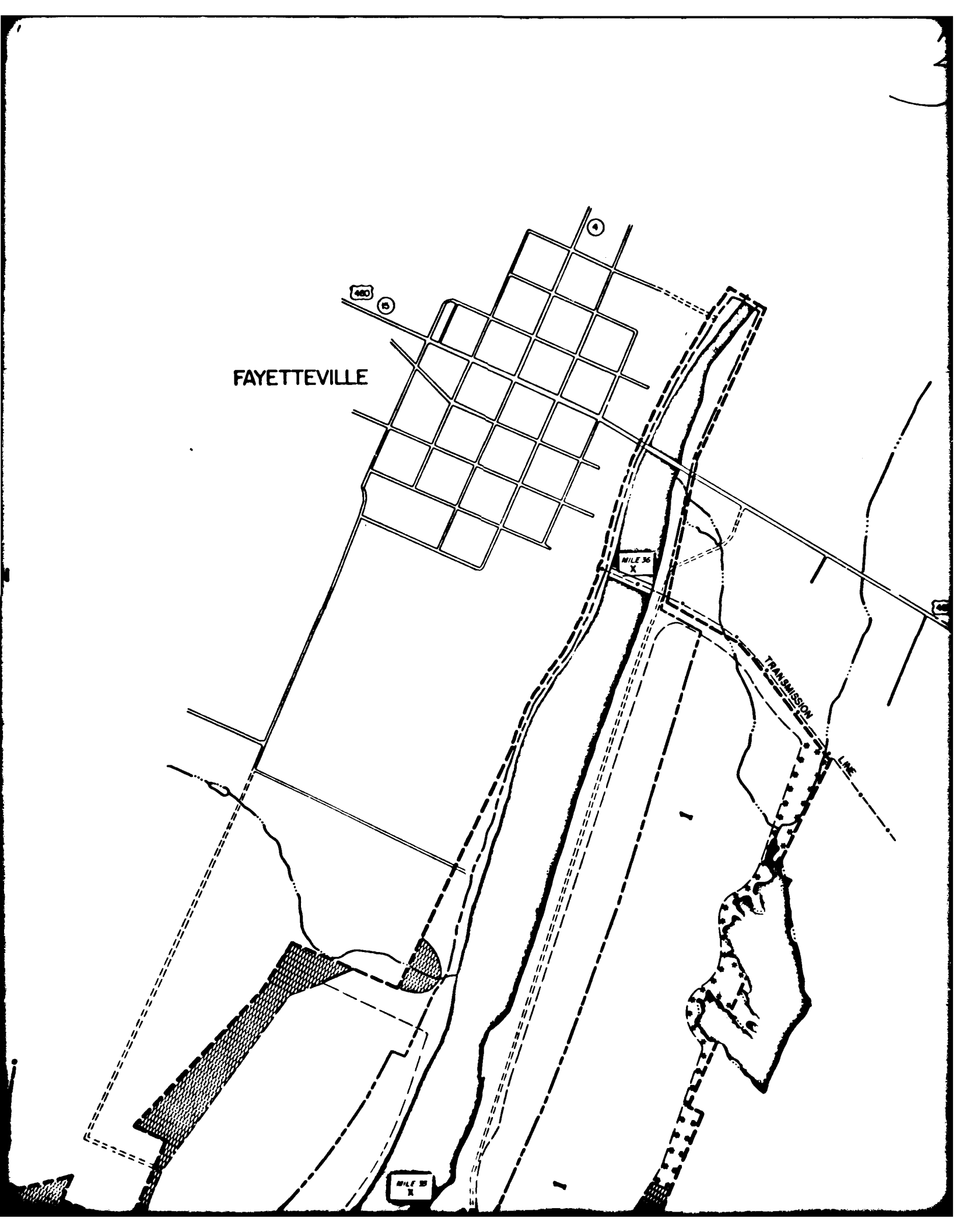


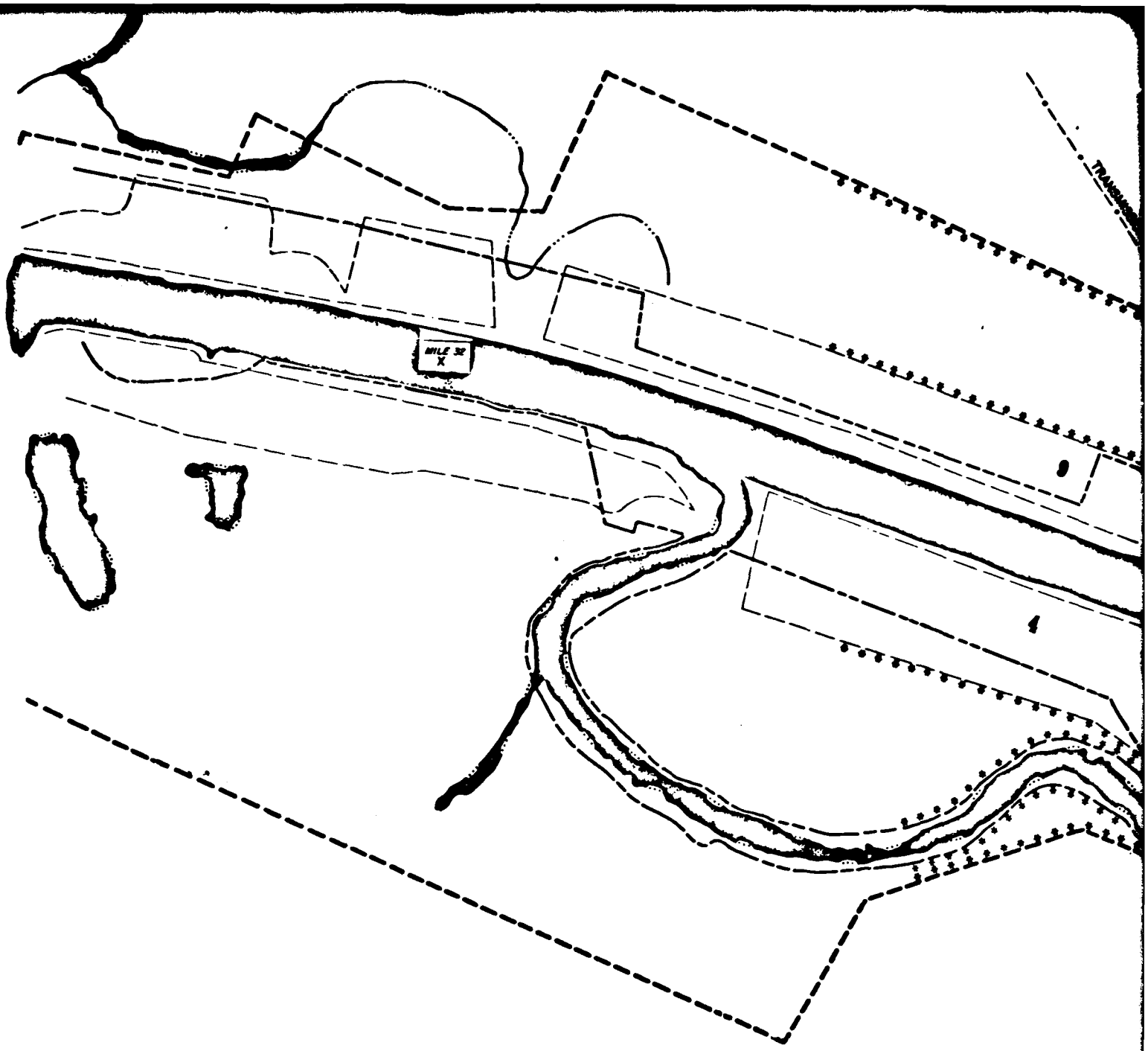
KASKASKIA RIVER

VEGETATION KEY

- BOTTOMLAND FORESTS
- GRASSY AREA
- OPEN WATER
- OLD FIELDS
- CULTIVATED FIELDS
- DREDGE MATERIAL PLACEMENT SITES
- CORPS MAINTENANCE BOUNDARY
- ILLINOIS DEPARTMENT OF TRANSPORTATION MAINTENANCE BOUNDARY




FAYETTEVILLE
MILE 36
TRANSMISSION
LINE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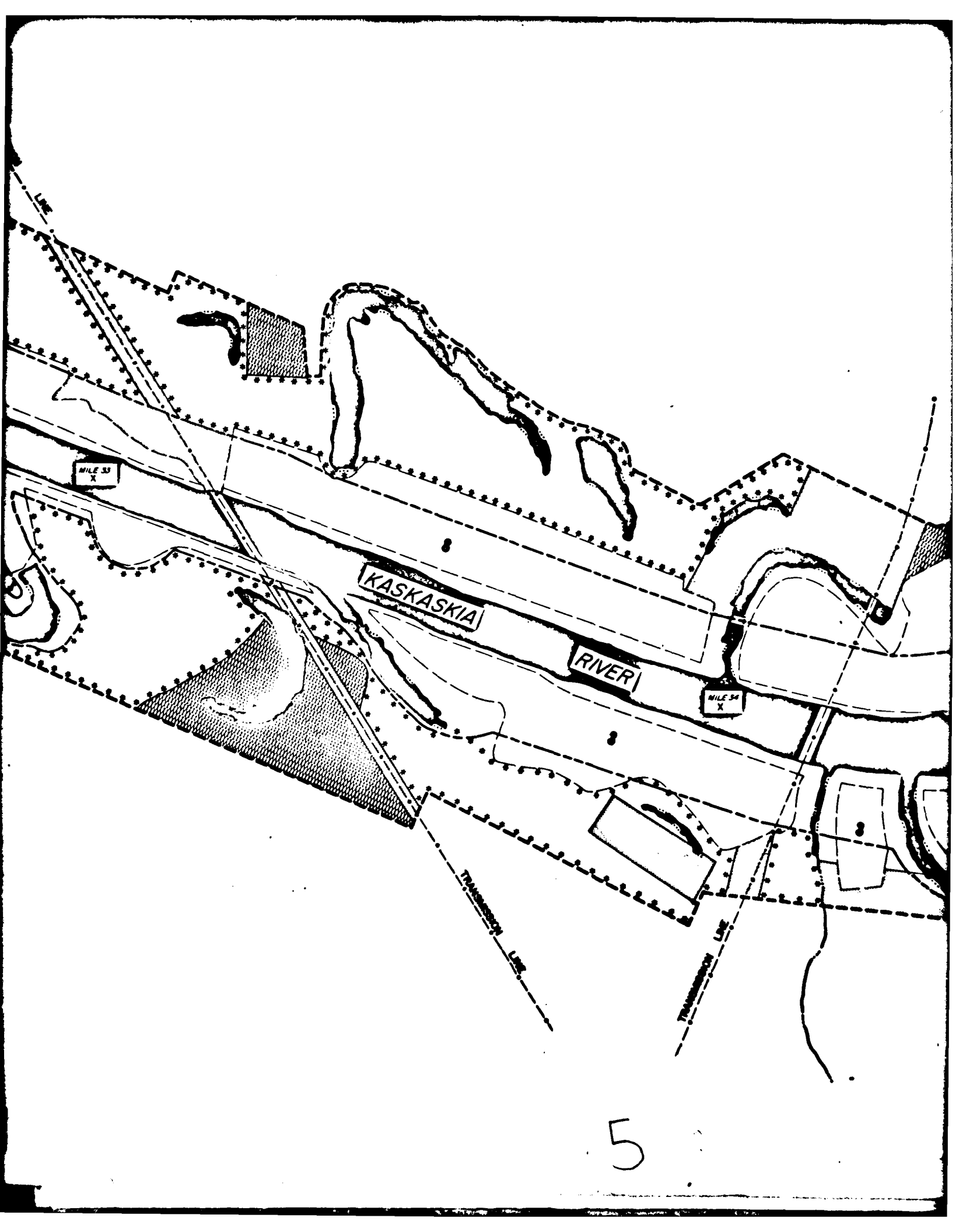
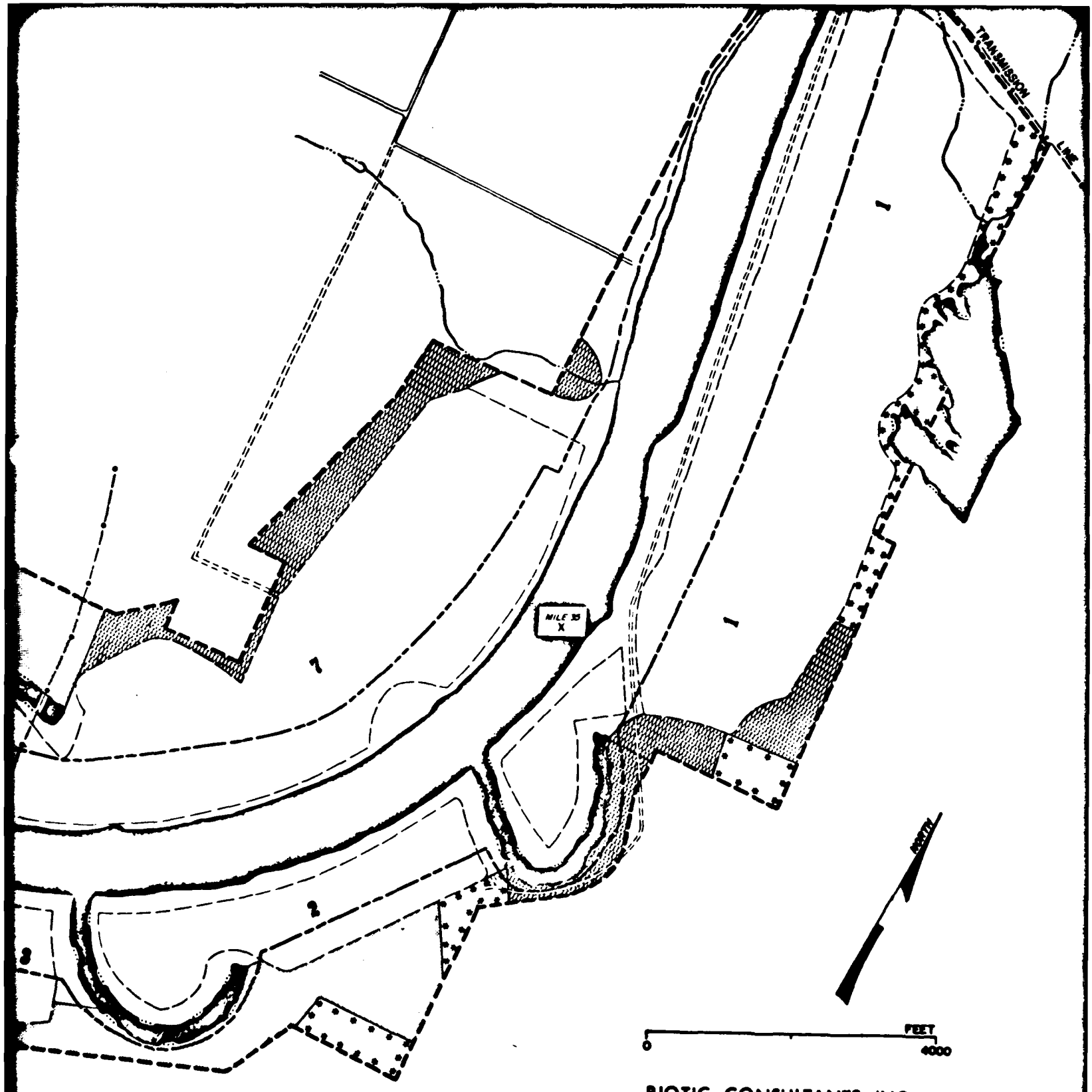

MILE 33
X
KASKASKIA
RIVER
MILE 34
X
TRANSMISSION LINE
TRANSMISSION LINE



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