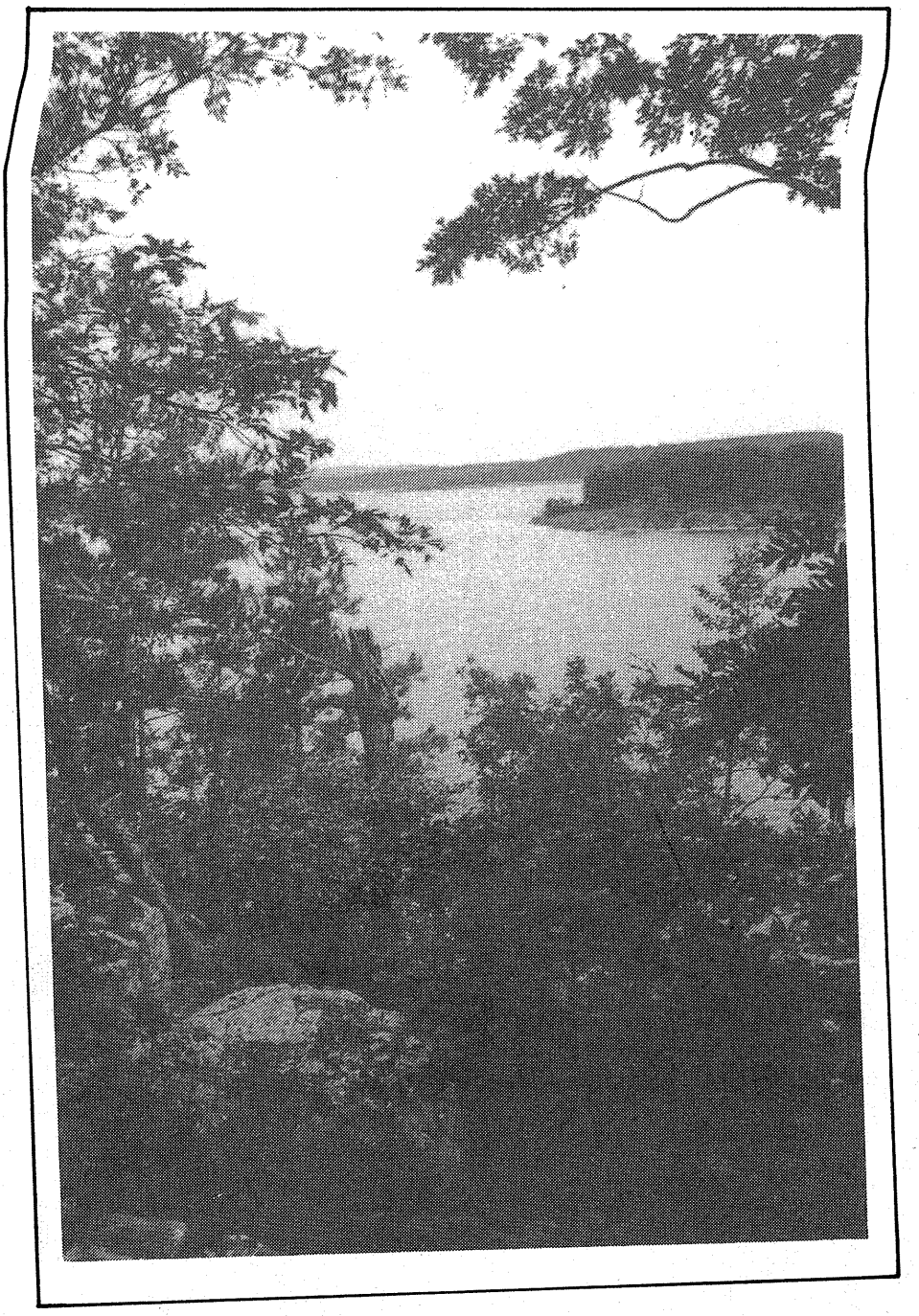

master plan for
NORFORK LAKE

Design Memorandum I-E

United States Army
Corps of Engineers
Little Rock District

November 1987
Revised June 1988

NORFORK LAKE MASTER PLAN

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CHAPTER 1
INTRODUCTION

CHAPTER I

INTRODUCTION

1-01 PROJECT AUTHORIZATION

Norfork Lake was authorized by the Flood Control Act approved 28 June 1938 (Public Law 761, 75th Congress, 3d session), as modified by the Flood Control Act approved 18 August 1941 (Public Law 228, 77th Congress, 1st session), for flood control and generation of hydroelectric power. The inclusion of storage for municipal and industrial water supply was authorized by the Water Supply Act of 1958.

Section 4 of the Flood Control Act approved 22 December 1944, as amended by Section 4 of the Flood Control Act approved 24 July 1946 and as further amended by Section 209 of the Flood Control Act approved 3 December 1954 (Public Law 780, 83d Congress), authorized the Department of the Army to provide for recreational use of lakes under its control. Water supply storage of 800 acre feet, under the provisions of the Water Supply Act of 1958 as amended, has been purchased by Water and Sewer Improvement District No. 3 of Mountain Home, Arkansas.

The Corps of Engineers is subject to specific guidelines regarding any changes in the authorized purpose(s) of its projects. Specifically, a change in authorized purposes requires: (1) a non-Federal public entity to share the costs associated with the new purpose, (2) the benefits of the new purpose must exceed those of the purpose it is replacing, and (3) Congress must legislate the change.

1-02 PREVIOUSLY ISSUED DESIGN MEMORANDUMS

A number of prior studies related to Norfork Lake have been completed as listed in Table 1-01. Each of these studies was considered in the development of this Master Plan. In addition to the listed Corps of Engineers' studies, reports prepared by local, state and regional agencies concerning Norfork Lake were reviewed. Pertinent references to other data sources are provided as they occur in this Master Plan text.

1-03 SCOPE OF MASTER PLAN

The prior Master Plan for Norfork Lake (Design Memorandum No. 1-D) was approved February 1974. This updated plan provides for orderly, progressive development of the project and changes in planning resulting from a re-evaluation after approximately 13 years of operation under the guidance and direction of Design Memorandum No. 1-D.

This Master Plan was prepared generally under new policy provided by Draft ER 1130-2-435 dated 23 January 1985. This regulation states that the Master Plan shall provide guidelines regarding the use, development, and management of the natural and man-made resources of a project. Under the provisions of ER 1130-2-435, the primary elements of the Master Plan include a resource analysis, recreation program analysis, and a land classification/resource use plan. The scope of work for this document has been limited in that it does

Table 1-01

PREVIOUSLY ISSUED AND CURRENTLY SCHEDULED
DESIGN MEMORANDUMS

Norfork Lake

Memo No.	Subject	Submitted or Scheduled	Date Approved
1-A	The Norfork Plan - Recreational Facilities at Norfork Lake, Missouri and Arkansas	Jan 46	Jan 46
1-B	Master Plan for Reservoir Development Management - Updated Jan 1960	26 Feb 60	1 Nov 60
1-C	Norfork Dam & Reservoir Updated Master Plan for Reservoir Development and Management	31 Mar 64	23 Jun 66
1-D	Norfork Lake, Updated Master Plan for Development and Management of Norfork Lake	Jul 73	Feb 74
1-E	Norfork Lake Master Plan	Aug 87	—

APPENDICES

No.	Subject	Date Approved
A	Project Resource Management	Jan 76
B	Forest Management Plan	Aug 79
C	Fire Protection Plan	Jan 75
D	Fish & Wildlife Management Plan	Aug 75
E	Project Safety Plan	Jun 73
F	Lakeshore Management Plan	Feb 82

not include the identification of resource management compartments or new land and water use classifications. Therefore, the scope of work did not include intensive investiga-tion of natural resource attributes. Emphasis was placed on an analysis of existing recreational resources at Norfork Lake, and the formulation of concep-tual plans for the future use and development of each public use area.

As per ER 1130-2-435, an Operational Management Plan (OMP) will ultimately be prepared to describe in detail how the resource use objectives and concepts prescribed in this Master Plan will be implemented and achieved. Further, a "General Plan" as defined in ER 1130-2-435 may be prepared pursuant to the Fish and Wildlife Coordination Act to describe detailed management recommendations for project lands and water to be managed specifically for fish and wildlife purposes.

1-04 MASTER PLAN OBJECTIVES AND FORMAT

Based upon the scope, as described in the previous section, a number of specific objectives were developed to guide the preparation of the plan. These objectives are as follows:

1. To assemble and analyze pertinent base data related to natural and cultural resources of the Norfork Lake project from a variety of sources including existing maps, design memorandums, appendices, plans, etc., and to utilize this data base to identify future lake management constraints and opportunities.

2. To conduct an analysis of historic and current recreational use of Norfork Lake and to develop projections of future recreational use and facility needs.

3. To conduct limited on-site investigations as required to verify and update existing conditions, problems, and improvement opportunities as they relate to the existing public use areas.

4. To identify and evaluate specific recreation area deficiencies including degree of user satisfaction, site impacts, general revenue generating capabilities, and relative long-term operational and maintenance costs.

5. To coordinate preliminary plan components and recommendations with applicable local, state, and federal agencies that have an interest in the future management, operation, maintenance and development of the project.

6. To identify resource use objectives consistent with guidance provided in ER 1105-2-167 to define and clarify applicable project-wide and site-specific recommendations.

7. To formulate and present future recreation area plans that will provide for more efficient management and operation through the consolidation of certain existing areas, and the separation of day-use and overnight facilities where possible and appropriate.

8. To present an integrated plan for recreation area development that has the ability to move through design, construction, and into operation with little change in the conceptual plan recommendations.

This Master Plan has been divided into eight chapters as described below:

- Chapter 1 is designed to orient the reader to the plan including a discussion of the scope, objectives, and format of the document.

- Chapters 2 and 3 provide a summary of pertinent information regarding the natural and cultural (man-made) resources of the project, with emphasis on the relationship of resource constraints and opportunities to the potential use and development of recreational areas.

- Chapter 4 presents an analysis of past, present, and future recreation uses at Norfork Lake. The chapter culminates with the identification of specific facility needs for 1985, 1991 and 2000; and a discussion of regional recreation facility needs.

- Chapter 5 identifies and summarizes the results of coordination activities that were conducted during the planning process. Copies of pertinent correspondence have been included as an attachment to the Master Plan.

- Chapter 6 begins with the presentation of project-wide Resource Use Objectives. Conceptual plans are then presented for each recreation area including a discussion of site conditions, constraints, opportunities, and recommendations. Chapter 6 also includes a discussion of intersite trail development, general development priorities, and off-road vehicle usage at Norfork Lake.

- Chapter 7 summarizes the status of existing Norfork Lake Master Plan appendices and the planned preparation of a new Operational Management Plan as per ER 1130-2-435.

- The plan concludes with Chapter 8, which provides definitions of major facility units or types as recommended in the plan. Cost estimates are included for all initial "five-year" plan improvements, including estimates for necessary camp unit restoration and new facilities.

CHAPTER 2

NATURAL RESOURCE ANALYSIS

CHAPTER 2

NATURAL RESOURCE ANALYSIS

2-01 INTRODUCTION

This chapter includes general information regarding the natural resources of the Norfork Lake area. Included are discussions of the regional location of the project and the river basin in which it is located; as well as project features such as physiography, topography, soils, flora, fauna, and climate. Where appropriate, these features are discussed in terms of the potentials and limitations they present for development, operation, and management of public recreation areas at Norfork Lake. The information presented in this chapter was used to help develop specific resource use objectives and to guide the siting of proposed recreation development.

In addition to the project-wide analysis included in this chapter, each of the existing and proposed recreation areas was analyzed in more detail. These site level analyses are presented in Chapter 6.

2-02 PROJECT LOCATION

Norfork Dam is located in Baxter County, Arkansas, on the North Fork River, about 4.8 miles upstream from its confluence with the White River. (See Plate 2-01.) The dam is approximately 12 miles southeast of Mountain Home, Arkansas. The lake extends eastward into Fulton County, Arkansas, and northward into Ozark County, Missouri.

2-03 DESCRIPTION OF PROJECT AREA

Norfork Lake is located in the upper White River Basin. The White River Basin begins in northwest Arkansas and winds its way along northern Arkansas, then south to the confluence of the Arkansas and Mississippi Rivers. The basin area is relatively undeveloped and unspoiled. This, combined with a mild climate, an abundance of fish and wildlife, and good quality water for water sports, makes it a very popular vacation and resort area. Five lakes have been constructed in the upper White River Basin, including Norfork, Beaver, Table Rock, Taneycomo (constructed by the Empire District Electric Company), and Bull Shoals. These lakes, which are shown on Plate 2-01, extend about 130 miles through northwest Arkansas and southwest Missouri and north-central Arkansas.

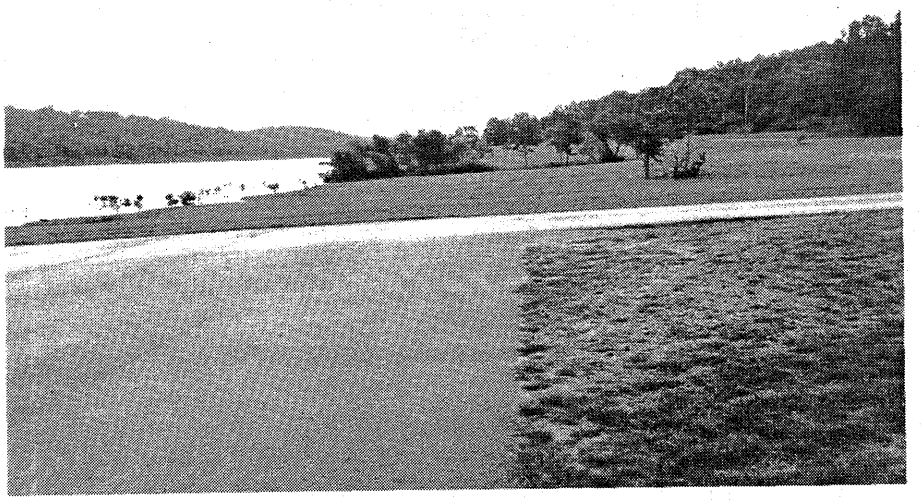
2-04 LAKE CHARACTERISTICS AND TOPOGRAPHY

Norfork Lake is located in the Ozark Mountain region of northern Arkansas and southern Missouri which is characterized by rugged and mostly wooded terrain. The lake is very irregular in shape, due to the mountainous terrain. Many large arms and bays extend up the valleys of tributaries, and the topography creates numerous small coves. The well-timbered shoreline varies from steep bluffs to gently sloping points and is indented with numerous coves. (See Photograph 2-01 and 2-02.) Many of the hills and flat-topped ridges in the vicinity rise to an elevation of 825 feet above mean sea level, and some of the higher peaks in the region reach an elevation of more than 1,100 feet above mean sea level.



Photograph 2-01

Steep side slope above Tracy Park Marina,
typical of much of the Norfork Lake shoreline.



Photograph 2-02

Relatively flat topography at Pigeon Creek Park,
typical of upper reaches of Norfork Lake

The lake has a surface area of 22,000 acres and 380 miles of shoreline at elevation 552 (spillway crest). At the top of the flood control pool (elevation 580), the lake has a surface area of 30,700 acres and 510 miles of shoreline. When the water reaches the top of the conservation pool, the lake extends 43 miles upstream from the dam. At the top of the flood control pool, the lake is 47 miles long.

2-05 WATER QUALITY

The tributary streams are rather short, averaging about five miles in length. There are numerous steep valleys which convey overland runoff into the lake. The streams in the vicinity are relatively cold, clear and swift and follow winding courses through deep, narrow valleys. The drainage area is approximately 1,800 square miles. The river and streams flowing into the lake carry very little silt and are not polluted by industrial or municipal wastes. The lake is clear except for short periods of time following heavy rains. The quality of the water is excellent for all types of water sports.

2-06 PHYSIOGRAPHY

The Norfork Lake area is part of the Ozark uplift. This region is characterized by flat-lying, sedimentary rocks composed predominantly of limestone and dolomitic limestone. The upland area surrounding the lake is part of the Salem Plateau, the surface of which is developed of limestone and dolomites of the Ordovician age. Remnants of the plateau are represented by the summits of the higher hills in the area. The rock strata underlying the lake and forming its rim are the Everton, Powell, Cotter-Jefferson City, and Roubidoux formations of Ordovician age.

2-07 SOILS

The soil mantle is a residual product of weathering. It is relatively thin on the hills. In some places, it is rocky due to disintegration of the cherty limestone; in others, it is very sandy with sandstone fragments and boulders; and in still other localities, it is composed of red clay, formed by the decomposition of limestone, intermingled with sand and chert fragments. The river has cut a meandering course deep into the bedrock, forming a well-developed narrow floodplain. The alluvial material in the floodplain is composed principally of silt and sand that seldom exceeds 30 feet in thickness. Chert, gravel and sand occur in typically long, narrow and thin bars located on the inside bends of the old river bed.

The 1983 Soil Survey of Baxter and Marion Counties, Arkansas (USDA Soil Conservation Service) indicates that the soils around Norfork Lake fall under two "general" soil map units, including the Arkana-Moko unit and the Doniphan-Gassville unit.

The Arkana-Moko unit consists of soils that formed in the residuum of dolomite and limestone. These soils are scattered throughout the part of Baxter County north of the White River. They are generally located on side slopes and ridgetops throughout the Norfork Lake project area. Arkana and Moko soils are both well drained. Arkana soils are moderately deep, and Moko soils are shallow.

The soils in this unit are used mainly as woodland supporting eastern redcedar and a variety of low to moderate grade hardwoods. In some gently sloping areas, the soils are used for pasture, but they are generally not suitable for cultivated crops. Depth to bedrock, shrink-swell potential, surface stones, erosion hazard and steep slopes represent the main limitations to the use of these soils for farming and most other intensive uses. (See Photographs 2-03 and 2-04.)

The Doniphan-Gassville soils are also scattered throughout the project area. Doniphan soils are deep and well drained on moderately sloping uplands. Gassville soils are moderately deep and well drained, and generally occur on steep side slopes. These soils are not suited for cultivated crops. Primary limitations for intensive use of these soils include slope, erosion hazard, surface chert, depth to bedrock, low strength, and slow permeability.

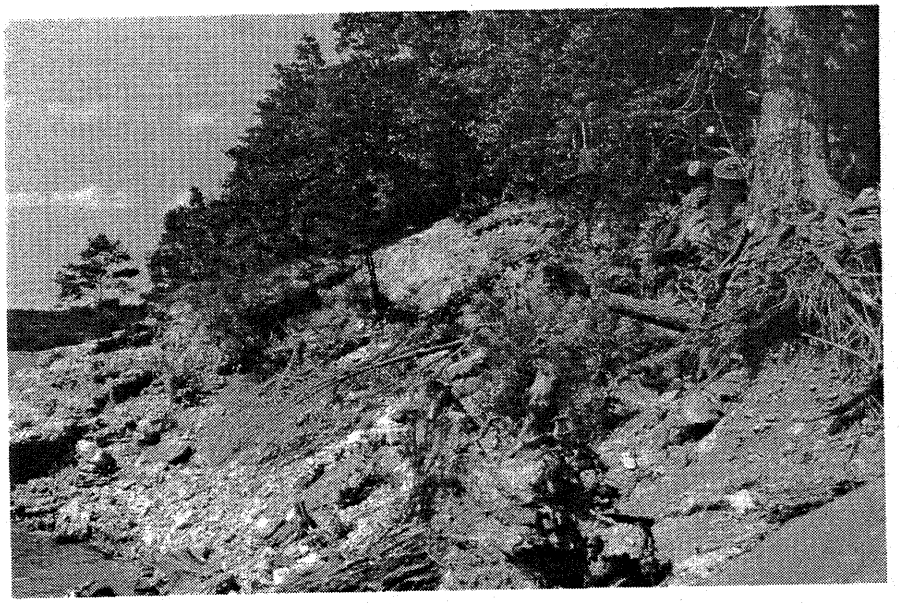
Within the broad soil unit classifications described above, there are approximately 19 more detailed soil complexes, associations, or undifferentiated groups. The specific distribution and characteristics of these groups were not analyzed on a project-wide basis. However, detailed soil units were mapped within the limits of all existing public recreation areas on Norfork Lake, and a matrix analysis of pertinent soil characteristics was developed and included on each map. These working soil maps were used to develop proposed recreation development plans, and they are on file at the District office and referenced as appropriate in Chapter 6 of this Master Plan.

2-08 TERRESTRIAL VEGETATION

A. General Ecology. The abundance of calcareous rock formations (limestone, marble, etc.) has had a very definite effect upon the vegetation of the entire White River Basin.[1] Prairie type vegetation has developed in some areas where these rock formations are near the surface. These areas support stands of the larger types of grasses, including various species of anropogon (bluestems), panicum (low panicum), and sorghastrum nutans (Indian). There are also several smaller forbs, such as allium (onion, leek, garlic), solidago (goldenrod), and others. These gradually blend into the more xerophytic vegetation (adaptable to dry conditions). In these areas, barren glades are formed. Some of the more numerous species are sedum (houseleek), agave (amaryllis, narcissus), and opuntia (prickly pear). Most of the gentle to steep north-facing slopes have a well-developed forest of trees adapted to moderately moist conditions with the sugar maple being prominent. On the steeper slopes, especially with westward or southward exposure, typical species include the blue ash, chinquapin oak, and several species of cedar.

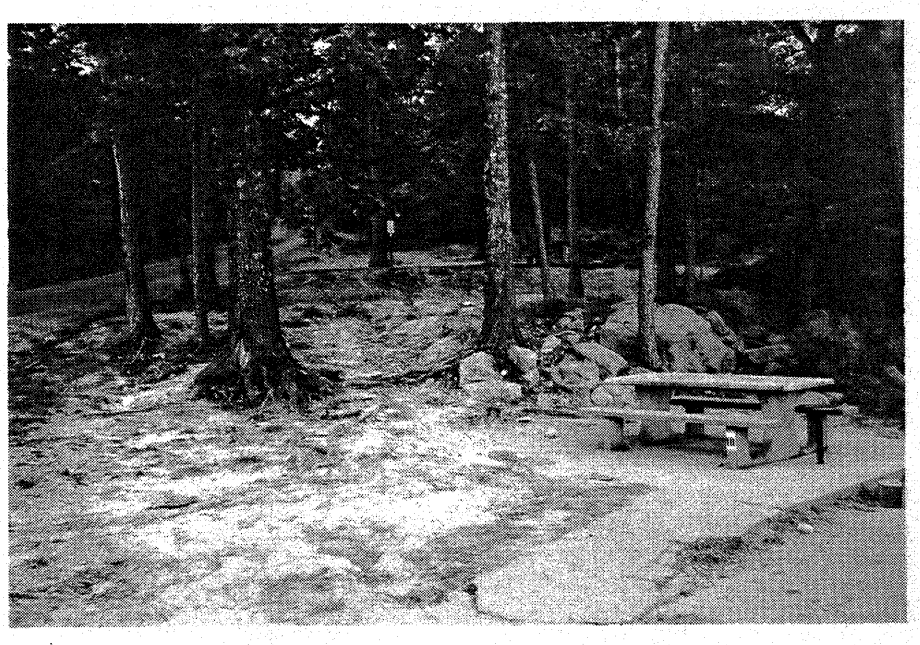
Very definite zones of vegetation are evident between the sand bars of the river bank downstream from the dam and the glades on top of the cliffs bordering the lake. Along the water's edge typical species include salix (willow), platanus occidentalis (sycamore), fraxinus pennsylvanica (ash), acer negundo (box elder), acer saccharinum (silver maple), forestiera acuminata (swamp privet), and cephalanthus occidentalis (common buttonbush). Along the floodplains, additional indicator species include populus heterophylla (swamp cottonwood), acer

[1] Appendix B: Forest Management Plan, July 1979, Norfork Lake Master Plan Update, DM No. 1-D.



Photograph 2-03

Severe shoreline erosion at Henderson Park



Photograph 2-04

Camp unit at Jordan Park illustrates potential for severe soil erosion and compaction at Norfork Lake public recreation areas

rubrum (red maple), juglans nigra (black walnut), quercus macrocarpa (burr oak), and quercus falcata (southern red oak). Switch cane is prevalent some distance up the talus slopes. Various species of oak, ash, and cedar are found on top of the ridges and cliffs. Some of the more prevalent invaders include sassafras, persimmon, briar, and broomsedge.

B. Vegetative Cover. The present forest consists mainly of oak (white, post, blackjack, black, northern red, and southern red), hickory, elm, gum, ash, shortleaf pine, redcedar, sycamore, black walnut, maple, birch, and cottonwood. Typical understory plants associated with the forests and rangeland consist of flowering dogwood, plum, hawthorn, mulberry, sassafras, pawpaw, blackberry, blueberry, Carolina buckthorn, Virginia creeper, grape, greenbrier, poison ivy, rose, sumac, asters, lespedezas, tickclovers, and numerous other species of forbs, grasses, and sedges. Prior to the acquisition of the land by the Government, much of the forested land area was cut by the former owners. Therefore, certain project areas are characterized by small defective hardwoods and eastern redcedar.

C. Threatened and Endangered Species. Contacts with the Arkansas Natural Heritage Commission and the Missouri Department of Conservation resulted in the identification of several terrestrial plant species of special concern at Norfork Lake. A list of these species and a summary of their status is provided in Table 2-01.

Table 2-01

TERRESTRIAL PLANT SPECIES OF SPECIAL CONCERN
Norfork Lake

Common Name	Scientific Name	Status
Ozark Chinkapin	(Castanea Pumila var. Ozarkensis)	Candidate for Federal listing as endangered or threatened
Trelease's Larkspur	(Delphinium Treleasei)	Regional endemic
Beard-Tongue	(Penstemon Cobaeu var. Purpureus)	Regional endemic
Heart-Leaved Plaintain	(Plantago Cordata)	Arkansas Natural Heritage Commission List of Threatened Plants; candidate for Federal listing as endangered or threatened
Forked Aster	(Aster furcatus)	Rare in Missouri; candidate for Federal listing as endangered or threatened
Ciliate Blue Star	(Amsonia ciliata, var. filifolia)	Endangered (Missouri list)
Umbrella Plant	(Eriogonum Longi folium	Endangered (Missouri list)

Source: Arkansas Natural Heritage Commission and Missouri Department of Conservation, 1986.

In some cases, specific locations of sensitive plant communities were provided by the referenced coordinating agencies. In some cases, sensitive plants were known to occur in or near several of the public recreation areas evaluated in this Master Plan. Where this was the case, the specific plant in question was located and named on the working file vegetation analysis maps prepared for each recreation area; and a general note was included on the appropriate recreation area composite site analysis. This process ensured that proposed development activities would not result in direct damage of known sensitive plant communities.

2-09 WILDLIFE

A. General. The Norfork Lake area supports a considerable variety of wildlife, including whitetailed deer, wild turkey, fox and gray squirrel, bobwhite quail, mourning dove, cottontail rabbit, raccoon, red and gray fox, opossum, mink, woodchuck, bobcat, skunk, coyote, and numerous nongame species. Deer, turkey, quail, squirrel, dove, and rabbit are the species most commonly hunted for game. Black bears were introduced into the area by the Arkansas Game and Fish Commission in the 1960s and are occasionally seen by visitors and hunters. Raccoon, mink, muskrat, and beaver are the most important furbearers, although skunk, weasel, red and gray fox, coyote, and bobcat also inhabit the White River Basin area. Migratory waterfowl, such as ducks and geese, are attracted to the lake during the spring and fall flights, and large populations winter on the lake.

B. Current Wildlife Management Activities. The Arkansas Game and Fish Commission has a lease covering 2,162 acres on the west side of Norfork Lake known as the Norfork Wildlife Management Area. This area has an abundance of deer and quail. The commission has developed a total of 32 acres of food plot plantings containing fescue, bicolor lespedeza, clover, rye, and alfalfa. Access to the area is limited to foot traffic which discourages illegal hunting and allows better law enforcement. This management area is open for hunting, subject to statewide regulations.

The Corps offers all possible assistance, encouragement, and cooperation to other federal and state agencies relative to their plans and programs in the interest of enhancing the fish and wildlife resources of the project. Every effort is being made to manage the project in a manner that will enhance fish and wildlife resources and be compatible with the operation of the project for its authorized purposes of flood control and the production of hydroelectric power. Recommendations which have been implemented are: (1) placing signs on the lake to delineate the Arkansas-Missouri state line, (2) licensing and leasing of project lands to state and federal fish and wildlife agencies for management purposes, and (3) permitting hunting on all lands where allowed by law or game regulations. Exceptions include lands around the dam, parks and other areas used for recreational purposes.

C. Threatened and Endangered Species. During the preparation of this Master Plan, contact was made with the Arkansas Game and Fish Commission, the Arkansas Natural Heritage Commission, the Missouri Department of Conservation, and the U.S. Fish and Wildlife Service. Based on a review of files maintained by these agencies, there are several wildlife species that potentially warrant special attention and concern at Norfork Lake. These species have been

listed in Table 2-02. This listing should not be considered to be complete since a full inventory would require comprehensive on-site investigation. However, the species listed in Table 2-02, and other significant species that may be identified by responsible agencies in the future, should be addressed in the operations management plan and special fish and wildlife management plans to be prepared to supplement this Master Plan document.

Table 2-02

WILDLIFE SPECIES OF SPECIAL CONCERN
Norfork Lake

Common Name	Scientific Name	Status
Gray Bat	(Myotis grisescens)	Endangered (Federal Register)
Indiana Bat	(Myotis sodalis)	Endangered (Federal Register)
Ozark Big Eared Bat	(Plecotus townsendii ingens)	Endangered (Federal Register)
Bald Eagle	(Italiaeetus leucocephalus)	Endangered (Federal Register)
Arctic Peregrine Falcon	(Falco peregrinus tundrius)	Threatened (Federal Register)
Great Blue Heron	(Ardea herodias)	3 Ranked Rookery (MO DNR)

Source: As shown under "Status."

Regarding the species listed in Table 2-02, it is known that the bald eagle frequents Norfork Lake during its fall-winter migration into Arkansas, with feeding and roosting sites located on the bluffs opposite the Udall recreation area. The Army Corps of Engineers conducts an eagle count on this reservoir each year during the month of January. In 1986, 17 bald eagles were observed. The peregrine falcon may pass through the project area during the fall-winter months in association with migratory waterfowl populations.

There are no known caves in the immediate project area that harbor endangered bats; however, there are caves in close proximity. These animals are known to forage almost exclusively over open water, including streams, rivers, and lakes with forested shorelines.

2-10 AQUATIC FLORA AND FAUNA

A. Fauna. Prior to the impoundment of Norfork Lake in 1943, the warm-water stream fishery consisted primarily of small-mouth black bass. Large-mouth black bass and Kentucky bass, walleye pike, catfish, and several species of sunfish were also found in appreciable quantities. These species are still present, and the lake has been stocked with large numbers of large-mouth bass, channel catfish, crappie, and white bass.

The Arkansas Game and Fish Commission, by using an experimental fish nursery pond since 1963, has introduced walleye and northern pike, striped bass, muskellunge, and blue catfish into the lake fishery. These fish have utilitzed habitats in the lake which the original stream-type fish avoid.

Rainbow and brown trout have been stocked in the lake and in the cold tailwaters of the dam since 1952. An intensive study revealed that trout could not tolerate the low dissolved oxygen concentrations in the deeper and cooler levels of the lake. Lake stocking of these fish has been halted due to lack of survival. However, the tailwaters were found to be suitable for a trout fishery. (See Photograph 2-05.)

The tailwaters, though suitable for trout survival, are not suitable for sustaining a trout fishery by natural reproduction. The significance of a trout fishery was sufficient to justify construction of the Norfork National Fish Hatchery on 47 acres downstream from the dam. (See Photograph 2-06.) The hatchery, through several expansions, has become the largest federal trout hatchery in the United States, with an annual production ranging from 430,000 and 530,000 pounds. Twenty-five percent of the hatchery's production is exported for use in Missouri and Oklahoma streams. The trout remaining in Arkansas are estimated to provide 938,000 man-days of fishing annually.

The waters of Norfork Lake provide a habitat for many different aquatic inhabitants. Listed below are most of the fish species found in Norfork Lake.

Large-mouth bass	Spotted bass
Small-mouth bass	Walleye pike
Sauger	Striped bass
Muskellunge	Blue catfish
Crappie	Flathead catfish
Carp	Channel catfish
Northern pike	White bass

B. Flora. At the present time, Norfork Lake is not experiencing any aquatic vegetation problems. Rather, the steep shoreline, along with the gravelly soil, make the establishment of aquatic vegetation difficult.

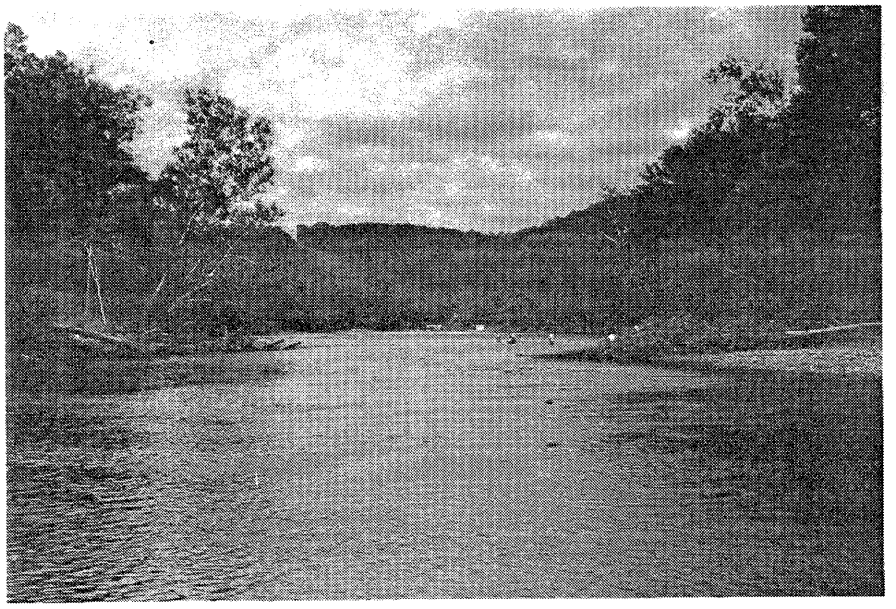
Various habitat improvement and maintenance techniques have been applied at Norfork Lake, with varying degrees of success. The technique most often used is water level manipulation. Fluctuations in water level can be used to enhance the fishery of a large lake by converting unusable nutrients in bottom soils to usable form. Survival of selected species of terrestrial vegetation can be improved during critical times by water level manipulations.

Other methods of habitat improvement and maintenance include removal of bottom-feeding fish, restricting fish harvest through size or number limits, new species introduction, and fish cover devices.

2-11 CLIMATE

The climate in the Norfork Lake area is generally moderate with a mean annual temperature of 58 degrees Fahrenheit. The maximum and minimum temperatures recorded are 106 and -29 degrees Fahrenheit, respectively. The average annual precipitation is 42 inches. Average annual snowfall is approximately 10 inches. The maximum and minimum annual precipitation since 1900 was 72 inches in 1927 and 24.7 inches in 1901, respectively.

January is the coldest month, with average temperatures around 39 degrees Fahrenheit, and July is the hottest, with an average temperature of 79 degrees Fahrenheit. The greatest average monthly rainfall is experienced in May.



Photograph 2-05

Norfork Lake tailwater area.



Photograph 2-06

Operations at Norfork Lake National Fish Hatchery

CHAPTER 3

CULTURAL RESOURCE ANALYSIS

CHAPTER 3

CULTURAL RESOURCE ANALYSIS

3-01 INTRODUCTION

Man-made features, conditions and policies can have a profound impact upon the operation, management and future development of Norfork Lake. Due to their importance, man-made (or cultural) resources are examined in this chapter. Where appropriate, the data are discussed in terms of how they impact future planning decisions.

3-02 PROJECT OPERATIONAL STRUCTURES

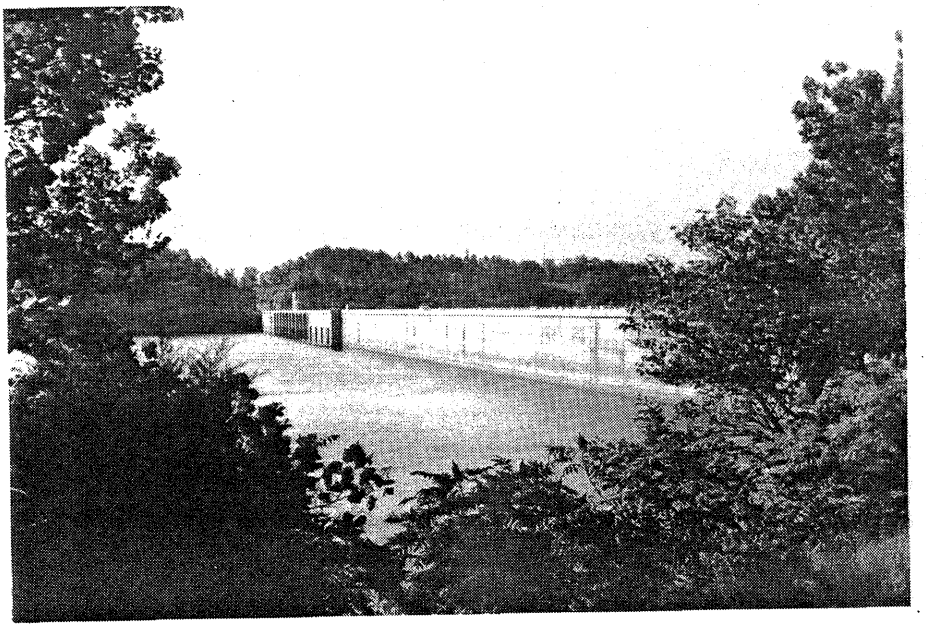
Norfork Lake dam is a concrete gravity structure with a crest length of 2,624 feet and a maximum height of 216 feet above the streambed. (Photograph 3-01.) There are 11 gated flood-control conduits, four by six feet in section, each having a capacity at top of power pool of 2,100 cfs. The conduits are controlled by hydraulically-operated slide gates designed to operate at full openings. The spillway consists of 12 bays, each 40 feet long, controlled by 28-foot-high tainter gates. (Photograph 3-02.) When the water level is below the spillway crest, the gates are set open one foot to relieve the pressure on the seals. Two 35,000-kw power units have been installed, each having a discharge capacity of approximately 2,700 cfs (when generating at rated capacity with the reservoir at top of power pool). A summary of pertinent engineering data related to the dam and lake are shown in Table 3-01.

3-03 LAKE REGULATION PLAN

A. General. Norfork Lake is a multiple-purpose project created for purposes of flood control. Norfork Lake was authorized by the Flood Control Act of 1938 as one of the original six lakes developed for flood control and other purposes in the White River Basin. The project is operated for primary purposes of flood control and hydropower, with secondary consideration to water supply, recreation, and fish and wildlife.

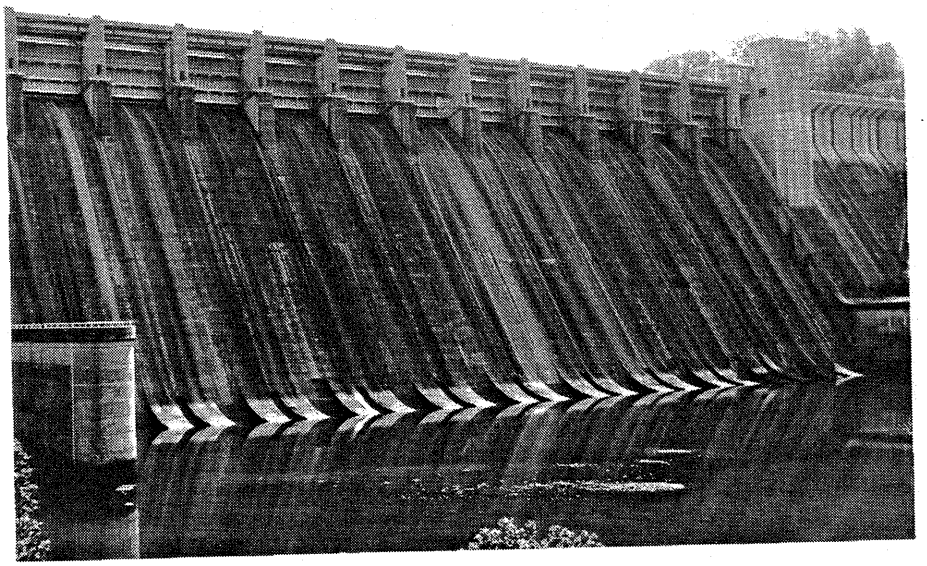
B. Lake Operation. In order to serve its authorized purpose in the most efficient manner, Norfork Lake is operated in accordance with a prescribed pool fluctuation policy. Pool levels are changed throughout the year to provide for maximum recreational use and power generation while, at the same time, providing sufficient lake storage space to reduce the impact of severe floods. Pool levels fluctuate according to season and rainfall amounts.

The top of the flood-control pool is at elevation 580, with provisions for inducing surcharge storage to elevation 584 during severe floods. The maximum seasonal pool is at an elevation of 555 between May 15 and June 15. Between June 16 and July 15, the pool level is lowered to elevation 554 and is maintained at this level until the 10th of October. Drawdown continues until mid-December when elevation 553 is obtained. This elevation is maintained until the first of May when the filling period begins and the pool is raised to elevation 555. The bottom of the power drawdown pool is established at elevation 510.



Photograph 3-01

Norfork Lake Dam from the
Quarry Dam Recreation Area



Photograph 3-02

Norfork Lake Spillway Gates
(below dam view)

TABLE 3-01

PERTINENT ENGINEERING DATA
Norfork Lake

Norfork Project, North Fork River

Dam:

Location, river mile	4.8
Type	Concrete gravity
Crest length, feet	2,624
Top dam, feet, m.s.l.	590
Streambed, feet, m.s.l.	374
Height, above bed, feet	216

Gated Ogee Spillway (12-40' wide by 28' high tainter gates)

Crest elevation, feet, m.s.l.	552
Net length, feet	480
Discharge at elevation 580, cfs	270,000

Sluices (4' wide by 6' high)

Number	11
Capacity at spillway crest, each, cfs	2,100
Total capacity at spillway crest, cfs	23,300

Power Plant

Main generating units, number	2
Rated capacity, each unit, kw	35,000
Station installed capacity, kw	70,000
Turbine discharge at rated capacity at top of power pool, each turbine, cfs	2,700

Lake:

	Elevation (feet above mean sea level)	Area (acres)	Capacity (acre-feet)	Capacity (inches)
Maximum power drawdown	510	12,300	544,200	5.7
Nominal top of conservation pool (spillway crest)	552	21,990	1,251,200	13.0
Maximum seasonal pool elevation (15 May-15 June)	555	22,800	1,318,200	13.7
Top of crest gates (lake area purchase contour)	580	30,700	1,983,000	20.6
Design pool	584	32,140	2,108,700	21.9

Source: U.S. Army Corps of Engineers.

Lake elevations are dependent upon inflow, available channel capacity for flood-control releases, and turbine discharge required to satisfy demands for hydroelectric power. The most severe drought known over the North Fork River Basin and two of the most severe flood periods have occurred since the project was placed in operation. The maximum pool level experienced to date was 579 in May 1973. The minimum pool elevation experienced was 509.8 in September 1954.

Norfork Lake levels are operated for a relative balance of Norfork flood storage in percent to the total flood storage in percent of Beaver, Table Rock, and Bull Shoals. The pool level is monitored to insure sufficient hydroelectric power from the turbines, to protect downstream flooding, to protect the fishery, and to maintain relatively balanced elevations on Beaver, Norfork and Greers Ferry Lakes. Figure 3-01 depicts five pool elevation zones related to specified operational criteria.

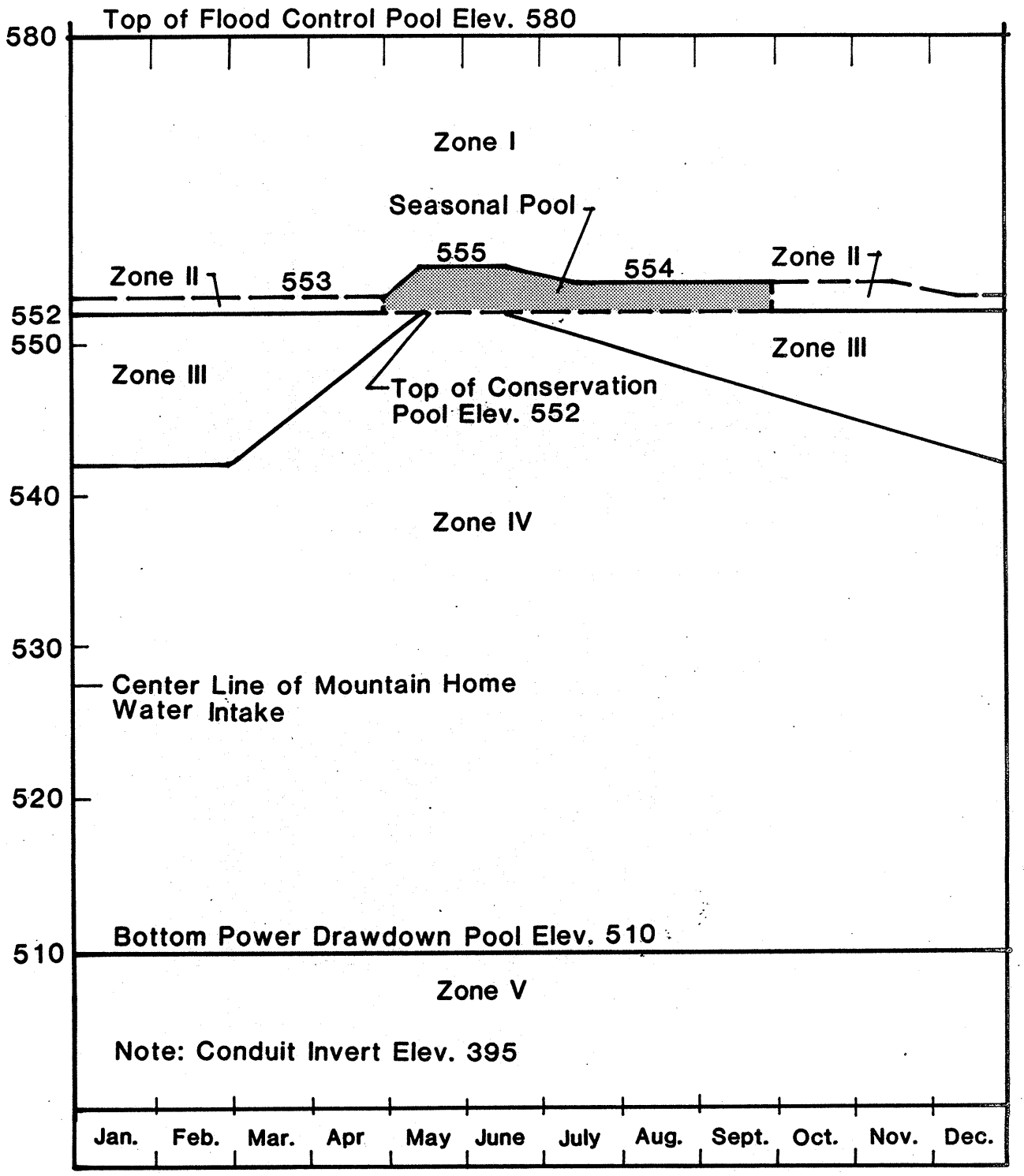
C. Effects of Lake Operations on Recreation Facility Use. As referenced in the preceding section, pool levels at Norfork Lake are subject to considerable variation over the course of each year. These fluctuations are necessary to be responsive to multiple resource needs. However, pool fluctuations do have a deleterious effect on certain public recreation facilities, project visitation, and the flood-prone land areas surrounding the lake. (See Photographs 3-03 and 3-04.) These impacts must be carefully evaluated in planning for site improvements and future development recommendations.

Specific impacts of high water levels include damage to recreational facilities, revenue losses resulting from inability to use flooded revenue generating facilities, accumulation of driftwood and other floating debris, degradation of lakeshore vegetation and increased shoreline erosion.

A significant lowering of the pool elevation, caused by power production requirements or drought, exposes aestheticlaly undesirable banks and mud flats, and creates a significant boating hazard associated with increased shallow water areas.

Table 3-02 indicates the severity of high water impacts on the use of recreational facilities at Norfork Lake. The numbers shown in the table reflect facilities that are actually flooded, or where access roads to facilities are flooded, thereby excluding facility use. In addition to the facility impacts shown in Table 3-02, most of the beach facilities at the project are not available to the public at elevation 563 or above.

These high water impacts have been considered in the formulation of the concept site plans presented in Chapter 6. Where feasible, adjustments have been made to reduce the impact of high water on the availability of recreation facilities.

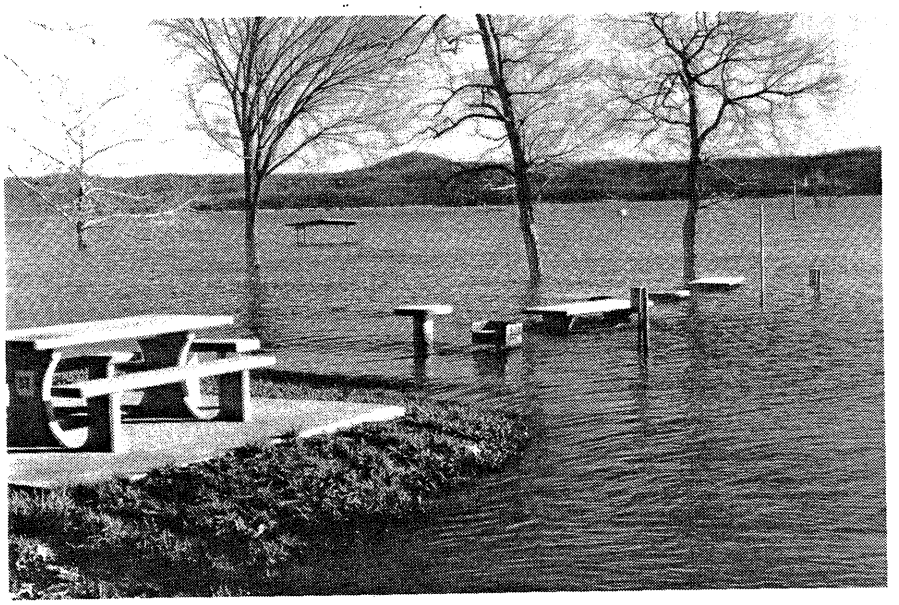


Norfork Lake

POOL ELEVATION ZONES

(Rule Curves)

Figure 3-01



Photograph 3-03
Impact of high water at Robinson Point Park



Photograph 3-04
Impact of high water at Cranfield Park

Table 3-02

SUMMARY OF FACILITY IMPACTS
RELATED TO FLOOD POOL LEVELS
Norfork Lake

Total Facility	Total Number of Units	Number Lost at El. 563	Percent Lost at El. 563	Number Lost at El. 580	Percent Lost at El. 580
Camp Unit	488	112	23%	276	57%
Launch Lane	41	14*	34%	36**	88%
Picnic Shelter	10	2	20%	7	70%
Restroom	45	4	9%	15	33%
Change House	4	2	50%	4	100%

*Access is possible at five of these "lost" lanes through use of parking lot or road as launch lane.

**Access is possible at one of these "lost" lanes through use of parking lot or road as launch lane.

Source: Harland Bartholomew & Associates, Inc.

3-04 SOCIOECONOMIC PROFILE

A. General. It was beyond the scope of this Master Plan to evaluate socioeconomic characteristics throughout the 20-county Norfork Lake market area. However, basic information was assembled for Baxter County, Arkansas as an indicator of conditions in the immediate project vicinity. Baxter County includes the dam, most of the lake and the nearest population center (Mountain Home, Arkansas). Statistics included in this section were derived from the County Data Book, 1980 Bureau of Census.

B. Demographics. Baxter County, Arkansas has experienced rapid growth during the last 20 years, resulting from the increased popularity of Norfork Lake. (See Table 3-03.) In 1960, only 4,000 more people resided in Baxter County than in 1880. Ten years later, 4,000 more residents had settled in Baxter County, and by 1980, the population almost doubled to 27,409.

Table 3-03

HISTORIC POPULATION LEVELS
Baxter County, Arkansas

Year	Population	Year	Population
1880	6,004	1930	9,519
1890	8,527	1950	11,683
1900	9,298	1960	9,943
1910	10,389	1970	14,521
		1980	27,409

Source: 1986 U.S. Census County Fact Book.

Although Baxter County's growth rate increased approximately 50 per cent from 1960 to 1970, and then almost 100 percent from 1970 to 1980, the impact on Norfork Lake's visitation has already occurred and will not dramatically change future visitation levels. The growth rates are high, but the actual population increase for 1960-1980 remains low in terms of its impact on Norfork Lake (under 20,000 for 20 years). Population projections for Baxter County (Chapter 4) show a much lower growth rate (under five percent) for the next 10 years.

In 1980 only 35.1 percent of the county's residents were native to the state of Arkansas, compared to over 50 percent for neighboring counties. A significant statistic concerning Baxter County's changing demographic profile is that the county ranked eleventh in the nation among counties for percent of population over 65 (27.3 percent) in 1980. The median age for Baxter County in 1980 was 46.7 years. These statistics reflect the increasing popularity of Norfork Lake as a retirement community.

In 1980, Baxter County, when compared to surrounding counties, had a higher than normal percent of population that had completed 12 or more years of schooling (53 percent) and 9 percent with 16 or more years of schooling. In 1980, 27 percent of the work force was employed in manufacturing, 20 percent in wholesale and retail businesses, 17 percent in professional and related services, and 9 percent in construction. Since 1960, a large amount of Baxter County's construction has occurred in or around Mountain Home. Census data show that a total of 76 percent of all structures in the county have been built since 1960, with 53 percent of them since 1970.

Median household income in 1980 reached $11,432 and per capita income rose to $8,356. Both income statistics are substantially higher than neighboring counties. Baxter County's household income by percent of total households is as follows:

Household Income ($ x 1,000))	Percent
Less than 10	41.6
10-19	38.5
20-29	13.9
30-39	3.4
40-49	1.0
50 or Above	1.5

C. Cultural. Baxter County has historically been a spirited county, with Mountain Home as its social, economic and educational focal point. A Baptist college was founded in 1890, making Mountain Home the educational center of northern Arkansas.

The Baxter County economy has traditionally been based on agriculture, timber harvesting and lumbering, although a slow transition occurred in the early 1900s to include a variety of manufacturing firms in the county economy. Recently, tourism has grown into a leading local industry, adding millions of dollars to the county's economy. In 1983, the county voted to allow the sale of alcoholic beverages, bringing in added income to the area.

3-05 ADJACENT LAND USE

The lands around Norfork Lake are dominated by forest cover and low intensity agricultural uses. The southern two-thirds of the project area are heavily forested; while the upper third is characterized by a mix of approximately 60 percent forest land and 40 percent open pasture or cultivated land areas. This pattern is directly related to the natural topographic and soil conditions in the area.

Major commercial activity near the project is limited to the town of Mountain Home. Residential land use adjacent to the project is most concentrated around the central portion of the lake. However, small subdivisions have been developed at numerous locations throughout the lower two-thirds of the project area. Some of these subdivisions are directly adjacent to project lands. (See Photographs 3-05 and 3-06.) In some cases, these developments have negative impacts on the project such as restricted public access to the lake, increased costs of right-of-way purchases, and general encroachment onto public lands. There are also approximately 25 private resort areas which have been built near or adjacent to the project boundaries.

In the future, residential and commercial development around the project can be expected to increase at a slow to moderate pace. The Corps of Engineers should continue to monitor changes in adjacent land use patterns, and attempt to reduce serious encroachment problems wherever possible. This issue should be studied in more detail when the updated land use analysis portion of this Master Plan is prepared at a later date.

3-06 EXISTING UTILITIES

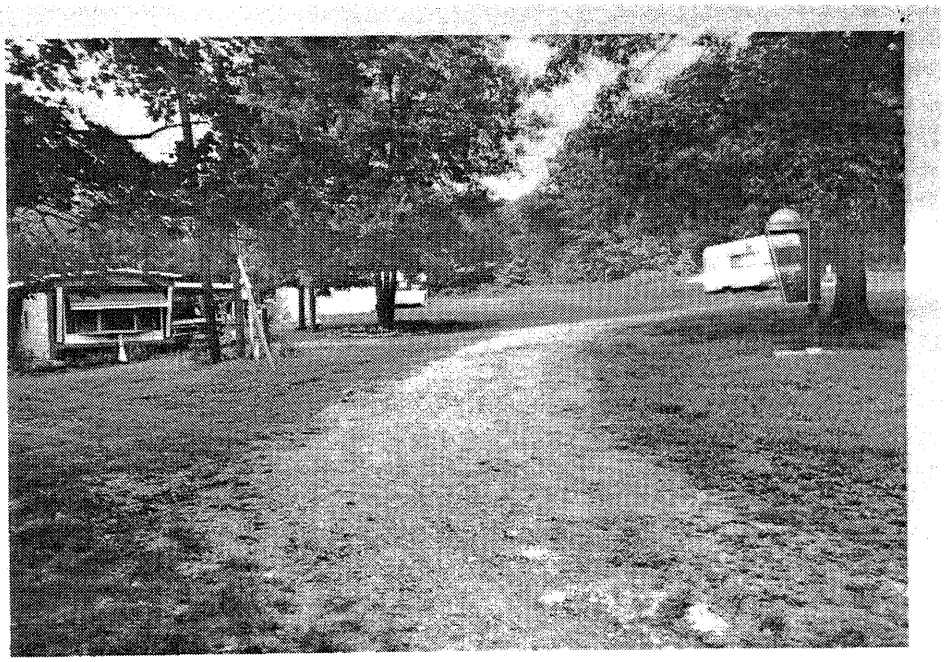
Electrical power to the Norfork Lake area is provided by three electrical companies. Electrical power to the Arkansas portion of Norfork Lake is provided by North Arkansas Electric Cooperative, while the Missouri portion of the lake is served by White River Electric and Howell-Oregon Electric Cooperative.

Most of the public recreation areas and marinas use electrical services, and several recreation areas provide electrical outlets for individual campsites including Bidwell Point, Cranfield, Gamaliel, Henderson. Jordan, Quarry (Dam Site), Robinson Point, and Panther Bay. Howard Cove's electricity is provided by the concessionaire.

Municipal water lines are available and used at Quarry Cove and Cranfield Parks. Most of the other recreation areas are served by pressurized, chlorinated well water systems. Sewage is collected in vaults which require periodic pumping at all sites. Shower facilities at developed recreation areas use septic tank/leach field systems.

3-07 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

A. General. The Corps of Engineers has recently issued a Draft copy of ER 1130-2-XXX entitled, Project Construction and Operation - Historic Preservation Program. Implementation of this Draft ER will result in increased historic preservation evaluation, planning and interpretation at Corps of Engineer civil works projects. Specifically, this Draft ER specifies that a Historic



Photograph 3-05

Typical private development adjacent to
COE property at Red Bank Park



Photograph 3-06

Typical private development
adjacent to Henderson Park

Properties Management Plan (HPMP) shall be prepared for each project area. The results of the HPMP shall become a part of the master planning process, and preservation strategies shall be refined and implemented through the project Operations Management Plan. Although not fully implemented in this current Master Plan, guidance provided in the referenced Draft ER should be incorporated in future efforts pending final approval and authorization.

Pursuant to the requirements of the Archaeological Protection Act of 1979, the exact location and disposition of known cultural resource sites on project lands shall not be identified in the Master Plan or Operational Management Plan. Prior cultural resource investigations conducted at Norfork Lake were reviewed during the preparation of this Master Plan. Specific resources were noted, and future development plans were reviewed to eliminate any potentially negative impacts on known cultural resource sites.

B. Summary of Previous Archaeological Investigations. Archaeology studies, surveys, and investigations within the parameters of Norfork Lake began in 1903 and have periodically continued up to the present date. Studies and investigations within the Norfork Lake area have provided basic archaeological knowledge, but only a small portion of the land surrounding the lake has actually been surveyed. The small amount of investigated land indicates that the potential for encountering significant new sites around Norfork Lake is high.

Between 1903 and 1976, the following studies, surveys and investigations have been performed in the region surrounding Norfork Lake:

Person Investigating	Year
Charles Peabody	1903
Mark Harrington	1924
Gilmore	1930
Tung	1951
Mark Harrington	1960
Charles Cleveland	1960
Davis	1961
Shiras and Shiras	1961
Charles Cleveland	1965
House, Shiras and Knight	1969
House and Smith	1973
Klinger	1975
Sandra Schultz	1975

Three cultural resource studies have been performed at Norfork Lake since 1977. The largest archaeological investigation of the Norfork Lake area was conducted in 1977 by Thomas J. Padgett.[2] Padgett surveyed 10 percent of Norfork Lake shoreline recording a total of 28 archaeological sites. Twenty-four sites were prehistoric, one was an historic site, and three had both historic and

[2] Padgett, Thomas J., Norfork Lake: A Cultural Resource Management Study with Implications for Prehistoric Settlement - Subsistence Patterns in the Ozarks, Arkansas Archaeological Surveys, University of Arkansas, July 1977.

prehistoric components. From this study, Padgett estimated that approximately 300 sites are located below the waters of Norfork Lake. Padgett's study recommended that six sites, which have escaped major destruction and which may be endangered by future development, should be field tested before development plans are finalized.

An additional archaeological survey was conducted by Peter H. Moore-Jansen of the land below Norfork Dam affected by the installation of generators No. 3 and 4. This study did not locate any significant archaeological or historical sites in the impact area.

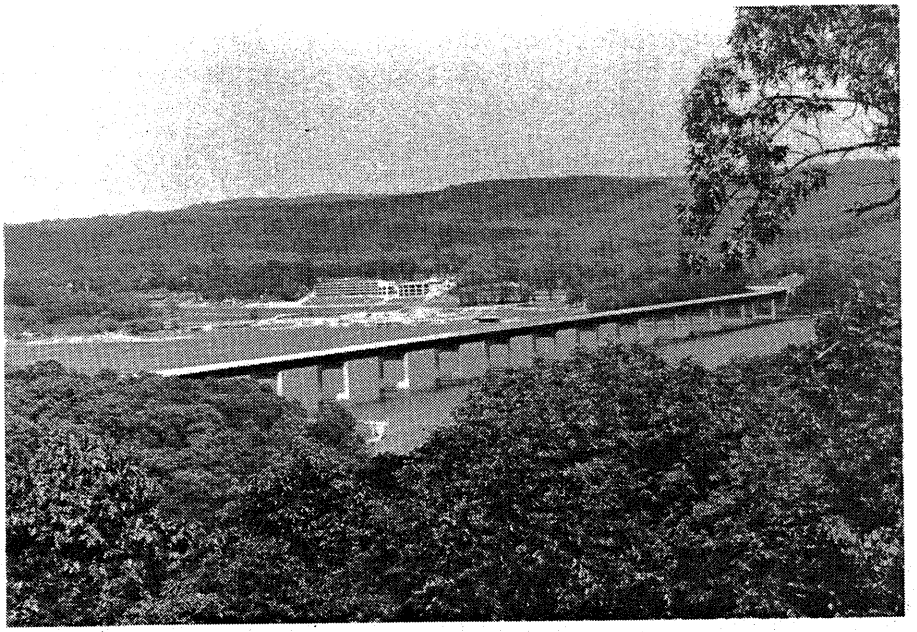
The latest study performed on Norfork Lake was by Aubra Lane Lee entitled, Cultural Resources Investigations, Norfork Lake, Arkansas, (Archaeological Assessments Report No. 58), 1985. This report summarized previous literature relating to cultural resources at Norfork Lake, and surveyed eight parcels of land (320 acres) that were declared excess and were going to be transferred to GSA for disposal. They recorded eight sites. It was determined that none of these sites were eligible for the National Register of Historic Places (NRHP).

C. Historic Sites. There are no known sites in the project area that would be significant under the provisions of the National Historic Preservation Act of 1966 (PL 96-515). However, six archaeological sites have been recommended for additional testing to determine their eligibility for the NRHP. No other sites have been identified, although 560 structures (houses, barns, etc.), 16 cemeteries, four schools, five bridges, 16 fords or ferry crossings and a portion of Highway 101 were known to be located below the conservation pool level. Although these structures were removed prior to the impoundment of Norfork Lake, they testify to the significant occupation of the area in the early 20th century. Future investigations will focus on locating, evaluating, and nominating all significant historic sites in the NRHP, in accordance with Section 110 (a)(2) of the National Historic Preservation Act.

3-08 ACCESSIBILITY

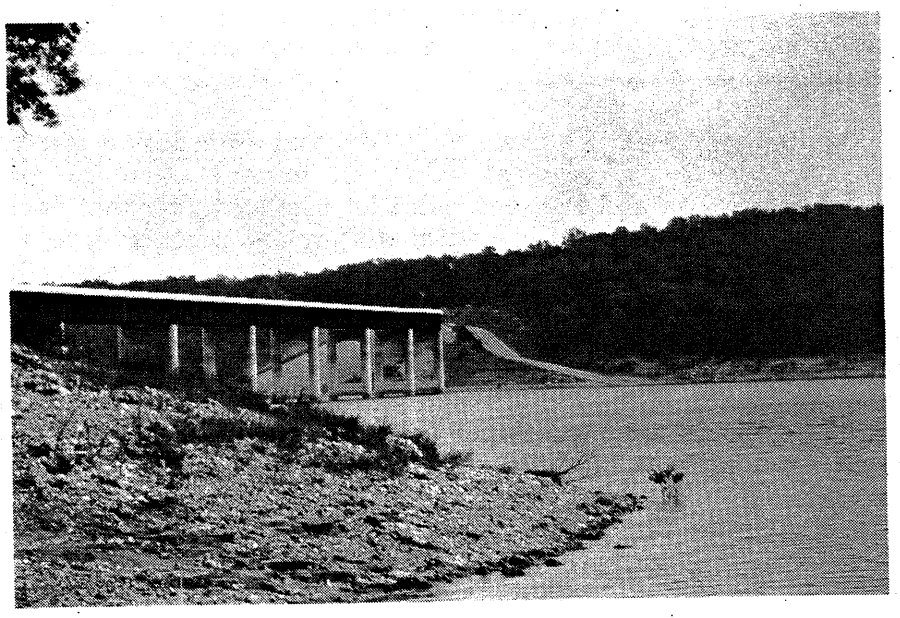
Present accessibility to Norfork Lake has a number of limitations. Few direct highways exist, and those that do exist are narrow, winding, two-lane roadways. Two major highways access Norfork Lake in Arkansas. U.S. Highway 62 crosses Norfork Lake in an east-west direction over a newly constructed bridge. (Photograph 3-07.) The Arkansas Highway Department plans to widen Highway 62 from two lanes to four lanes, improving accessibility. Highway 101 crosses over Norfork Lake in a north-south direction by way of a second newly constructed bridge, where it joins with Highway 62. (Photograph 3-08.) Principal access in Missouri is via U.S. Highway 160 and State Highways 101 and 142.

Norfork Dam is accessible from the town of Mountain Home, northwest of the dam, over about 17 miles of paved State Highways 5 and 177; also from the town of Batesville, southeast of the dam, over approximately 70 miles of paved State Highways 69, 56, 5 and 177. These principal paved roads have numerous connecting paved, gravel-surfaced, graded, and unimproved roads which provide access to most portions of the lake. Freight service is provided by the White River Branch of the Missouri Pacific Railroad, which passes through



Photograph 3-07

Bridge across Norfork Lake on Highway 62
(Henderson Park and new hotel in background)



Photograph 3-08

Bridge across Norfork Lake on Highway 101 has contributed to improved access and changes in historic use patterns.

the town of Norfork seven miles from the dam site. Baxter County Regional Airport at Mountain Home has a 3,500-foot-long, paved runway, but this local airport is not served by any major commercial airline.

3-09 APPLICATION OF PUBLIC LAWS

The laws most pertinent to the operation and management of Norfork Lake are discussed below:

A. Public Law 78-534, Flood Control Act of 1944 (16 USC 460d). Section 4 of the Flood Control Act of 1944, as amended in 1946, 1959, and 1962, authorized the U.S. Army Corps of Engineers to construct, maintain and operate public parks and recreational facilities in reservoir areas under their jurisdiction and to grant leases and licenses for project lands to other public agencies.

B. Public Law 85-624, Fish and Wildlife Coordination Act of 1954. The Fish and Wildlife Coordination Act of 1954, as amended in 1958, provides that fish and wildlife conservation shall receive equal consideration with other project purposes and that such consideration will be included in other aspects of water resource development programs. Fish and wildlife conservation and enhancement programs may be developed under a 75 percent federal and 25 percent state cost-sharing agreement.

C. Public Law 86-717 of 1960 (16 USC 580m and n). This act provides for the protection of forest cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief Engineer. The act requires that, where practicable, timber resource management should be carried out on Corps reservoir lands to increase the value of forest areas for conservation, recreation and other beneficial uses.

D. Public Law 89-72, Federal Water Project Recreation Act of 1965 (16 USC 4601-12). This act requires that full consideration be given to opportunities for recreation and fish and wildlife enhancement; that recreation planning be based on coordination of use with existing and planned federal, state and local recreation; and that nonfederal administration of recreation and enhancement areas be encouraged. The act requires that, without cost-sharing, no facilities for recreation and fish and wildlife enhancement be provided except those justified to serve other project purposes or as needed for public health and safety. If, in the absence of a local sponsor, lands are acquired to preserve the recreation and fish and wildlife potential of the project, and if 10 years after the initial project operation there is still no local sponsor, the lands may be sold or used for other purposes. The views of the Secretary of the Interior on the extent to which the proposed recreation and fish and wildlife development conforms to and is in accord with the state comprehensive plan shall be included in any project report.

E. Public Law 89-669, Protection of Rare and Endangered Species Act (16 USC 1531 and 1536). This act states the policy of Congress that the Secretaries of the Interior, Agriculture, and Defense shall seek to protect species of native fish and wildlife, including migratory birds, that are threatened with extinction and, insofar as is practicable and consistent with the primary purposes of these agencies, shall preserve the habitats of such threatened species on lands under their jurisdiction.

F. National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq.). This act declares a national environmental policy and requires that all federal agencies shall, to the fullest extent possible, use a systematic, interdisciplinary approach which integrates natural and social sciences and environmental design arts in planning and decision making; study, develop and describe appropriate alternatives to recommended course of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources; utilize ecological information in the planning and development of projects; and include an environmental impact statement in every recommendation or report on proposals for major federal actions significantly affecting the quality of the human environment.

G. Public Law 91-611, River and Harbor and Flood Control Acts of 1970. Title II, Section 234 of this act gives citation authority to designated federal personnel for the purpose of citing visitors who commit violations of those rules adopted by the Secretary of the Army related to the protection of Corps of Engineers project resources.

H. Public Law 93-291, Preservation of Historic and Archaeologic Data Act of 1974. This act permits the expenditure of up to one percent of the amount appropriated for a Civil Works project for the survey, recovery, analysis and reporting of important (scientific, historical, archaeological and paleontological) data which may be lost as the result of Civil Works Projects under Corps jurisdiction, including nonfederal lands provided by local interests for certain types of projects. The authorities of Public Law 93-291 apply to operating projects, as well as those in the planning or design stages.

I. Public Law 96-515, Archaeological and Historic Preservation Act, as amended (16 USC 469 et seq.), ("Reservoir Salvage Act"). This act provides for the preservation of historical and archaeological data which might otherwise be lost or destroyed as a result of flooding, or any alteration of the terrain caused as a result of any federal construction project; for coordination with the Secretary of the Interior whenever activities may cause loss of scientific, prehistorical, historical or archaeological data; and for expenditure of funds for recovery, protection and data preservation.

J. National Historic Preservation Act, as amended (42 USC 470 et seq.). This act states a policy of preserving, restoring and maintaining cultural resources and requires that federal agencies take into account the effect of any undertaking on any site on or eligible for the National Register of Historic Places; afford the Advisory Council on Historic Preservation the opportunity to comment on such undertaking; nominate eligible properties to the National Register; exercise caution in disposal and care of federal property which might qualify for the National Register; and provide for the maintenance of federally owned and registered sites.

K. Archaeological Resources Protection Act of 1979 (16 USC 470 aa-11). This act protects archaeological resources and sites which are on public lands and Indian lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional community and private individuals. The act also establishes requirements for issuance of permits by federal land managers to excavate or remove any archaeological resource located on public or Indian lands.

L. Public Law 93-303 of 1974. This act provides that fair and equitable fees will be assessed the users of specialized sites, facilities, equipment or services provided at substantial federal expense. That law is the authority for the user fees charged at family and group camping facilities at Corps-managed areas. Such fees are primarily for the use of special services over and above the normal free use by the public of the project's natural resources and should not be construed as entrance fees for the use of these resources.

M. Public Law 93-643, Highway Amendment of 1974. The Highway Amendment of 1974 allows the Department of Transporation to participate in the construction or reconstruction of access roads leading to public areas on Corps reservoirs.

N. Public Law 92-75, Federal Boat Safety Act of 1971. The Federal Boat Safety Act of 1971 authorized federal agencies to establish boat safety regulations for areas within their jurisdiction, or to accept as a supplement to federal regulations, a Boating Safety Program which is designed and enforced by appropriate state authorities. Guidelines are also established for development and funding of the state programs. Adoption of portions of the U.S. Coast Guard Boating Safety Regulations by the Corps of Engineers provides limited enforcement authority. However, primary responsibility remains with the states.

O. Water Resources Planning Act, as amended (42 USC 1962 et seq.). This act declares a policy of encouraging the conservation, development and utilization of water and related land resources.

P. Fish and Wildlife Coordination Act, as amended (16 USC 661 et seq.). This act requires that wildlife conservation receive equal consideration with other features of water-resource development programs; that proposals for work affecting any body of water be coordinated with the Fish and Wildlife Service (FWS) and the state wildlife agency; that recommendation of the FWS and the state agency be given full consideration; and that justifiable means and measures for wildlife purposes, including mitigation measures, be adopted. The act requires that adequate provision be given for the use of project lands and waters for the conservation, maintenance and management of wildlife resources, including their development and improvement. It further provides that the use of project lands for wildlife management be in accordance with general plans approved jointly by Army, Interior, and the state wildlife agency.

CHAPTER 4

RECREATION USE ANALYSIS

CHAPTER 4

RECREATION USE ANALYSIS

4-01 INTRODUCTION

This chapter presents an analysis of past, present and future recreation use at Norfork Lake. Projections of future visitation are used to identify specific facility needs. The chapter closes with a discussion of competing regional resources and regional facility needs as presented in the Missouri and Arkansas state recreation plans.

4-02 HISTORIC AND CURRENT VISITATION

Visitation at Norfork Lake increased at a steady pace—from approximately 1,500,000 in 1967 to 3,900,000 in 1981. (See Table 4-01.) Since 1981, the annual visitation level has remained relatively steady, between 3.8 and 4.0 million visits.

Table 4-01

HISTORIC ANNUAL VISITATION
Norfork Lake (1967-1985)

Year	Annual Visitation	Year	Annual Visitation
1967	1,531,500	1976	3,263,700
1968	1,767,100	1977	3,235,100
1969	2,099,500	1978	3,201,300
1970	2,487,100	1979	3,120,000
1971	2,930,100	1980	3,066,525
1972	3,185,500	1981	3,894,899*
1973	2,984,400	1982	3,930,200
1974	3,197,100	1983	4,000,291
1975	3,592,700	1984	3,924,126
		1985	3,822,087

* Significant increase between 1980 and 1981 is a result of the project's changing from the use of cable activated traffic counters to more accurate electronic counters.

Source: U.S. Army Corps of Engineers.

The Corps of Engineers conducted a survey of recreation use at Norfork Lake in 1985. Although the 1985 recreation season was influenced by bad weather and high water levels, the information generated by the survey was useful to generate selected visitation variables. The survey provided a monthly record of recreation activity occasions. Total annual and peak season (April

through September) activity occasions were also documented by the survey. This information was used to develop activity participation rates. (See Table 4-02.) Visitation data from 1983 and 1984 were also analyzed to insure the validity of the 1985 participation rates.

During 1985 the most popular activity was sightseeing, followed by fishing and swimming. Nearly 70 percent of all activities occurred during the six-month peak season of April 1 through September 30. Peak use of picnicking, swimming, skiing and camping facilities occurred during the months of June, July and August. Seasonal trends show that fishing is most popular in spring and fall, and hunting in the non-peak season of October through March.

4-03 VISITATION PROJECTIONS

A. Technique Selection. ER 1105-2-40 states that the Corps of Engineers shall utilize one or more of the following techniques to prepare recreation visitation projections.

1. Regional Use Estimating Model (UEM)
2. Site-Specific Use Estimating Model
3. Similar Project Approach

The first two techniques (use estimating models) require a detailed data base on distance traveled, socioeconomic factors and characteristics of the site, and alternative recreation opportunities. Technique 1 requires the use of regional data as they relate to a project, while Technique 2 requires much of the same data plus site specific data from comparable existing projects. During this study, it was determined that there were no existing models that were applicable for use at Norfork Lake. Furthermore, the existing data base for Norfork Lake is not adequate to develop an appropriate use estimating model as discussed in ER 1105-2-40.

Since the aforementioned models were not feasible, visitation to Norfork Lake was projected using the Similar Project Approach, which is based on the selection of a per capita use curve that relates use rates to distance traveled.

B. Selection of a Similar Project. Future visitation to Norfork Lake has been projected in accordance with the procedures described in Technical Report No. 2, "Estimating Initial Recreation Use."[3] Norfork Lake was one of the original projects studied in Technical Report No. 2. Therefore, the data base contained in Tech 2 was used as a starting point for this analysis. Since the Tech 2 report is over 15 years old, the data and curves were carefully tested against actual historic visitation data for Norfork Lake to develop a curve that would result in accurate and reasonable projections.

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(3) "Estimating Initial Reservoir Recreation Use," Plan Formulation and Evaluation Studies Recreation Technical Report No. 2, US Army Engineer District, Sacramento; October 1969.

Table 4-02

TOTAL ACTIVITY OCCASIONS AND PARTICIPATION RATES
Norfork Lake (1985)

Month	Monthly Total	Activity Occasions								
		Boat	Fish	Hunt	Picnic	Sightsee	Ski	Swim	Camp	Other
January	131,217	10,645	57,386	7,329	7,429	64,174	0	0	2,692	2,240
February	147,522	11,565	62,516	8,573	8,085	73,792	0	0	3,025	2,618
March	228,108	19,149	101,996	12,303	13,265	108,453	0	0	5,910	3,718
April	269,342	19,976	112,888	0	12,451	109,215	1,952	6,570	11,322	5,030
May	276,527	19,756	114,193	0	13,029	116,690	1,833	6,118	11,098	5,397
June	571,867	90,766	71,155	0	55,346	199,417	54,351	248,940	51,976	0
July	658,071	106,233	83,078	0	64,777	219,025	63,821	292,344	66,893	0
August	638,230	102,539	80,709	0	62,216	213,009	61,822	284,579	65,557	0
September	251,433	19,078	103,161	0	11,543	104,736	1,975	6,652	12,644	4,192
October	271,021	23,002	117,740	15,214	15,406	129,394	0	0	7,221	4,409
November	197,546	15,359	83,408	11,497	10,796	98,400	0	0	4,027	3,517
December	181,203	13,842	75,682	10,712	9,783	91,064	0	0	3,611	3,272
Total	3,822,087	451,910	1,063,912	65,628	284,126	1,527,369	185,754	845,203	245,976	34,393
Total Apr-Sept	2,665,470	358,348	565,184	0	219,362	962,092	185,754	845,203	219,490	14,619
Participation Rate*		11.82%	27.84%	1.72%	7.43%	39.96%	4.86%	22.11%	6.44%	0.90%

* Based on 1985 visitation survey information.

C. Market Area and Per Capita Use Rates. A 1985 user survey at Norfork Lake identified both the day use and total market area and proved to be the most recent data available. However, verification of the survey's accuracy with the Little Rock and Norfork office of the Corps of Engineers revealed that numerous data entry errors by key punch operators had invalidated portions of the survey results, and that corrected data would not be completed in time for use in this report. Technical Report No. 2 (as referenced under 4-03, part B) is the only other source of information on Norfork Lake market area boundaries. Therefore, the information contained in Technical Report 2 was used for this component of the study.

Technical Report No. 2 defines the day-use market area as the area "which contributes 80 percent or more of the annual day-use visitation to the reservoir." Technical Report No. 2 indicated that the day-use market area for Norfork Lake included the area within 75 highway miles from the project. Thus, it was assumed that 80 percent of the visitation to Norfork Lake originates in counties whose approximate population centroid lies within 75 road miles of the lake. For this report, the approximate centroid of a county's population is assumed to be the town or city with the largest population.

For analysis and population projection purposes, Technical Report No. 2 divided the Norfork day-use market area into six distance zones. Each county was assigned to its appropriate zone, based on the number of road miles from Norfork Lake to the county centroid. (See Plate 2-01.)

Table 4-03 illustrates zonal per capita use rates as included in Technical Report No. 2, and as modified for use in this study. As shown, the per capita use rate for Zone 1 was reduced from 84.8847 to 50.6377. This adjustment was required to reflect changes in per capita use and known visitation rates within the market area since the preparation of the Tech 2 report. The adjustment was made by "fitting" the per capita use rate curve to known visitation patterns at Norfork Lake during the 1985 visitation season. In addition, examination of Zone 1 per capita use rates for similar projects indicated that the 84.8847 figure originally developed for Norfork Lake was considerably higher than those experienced at comparable lakes.

Table 4-03

ZONAL PER CAPITA USE RATES
Norfork Lake

Zone	Highway Miles	Tech. Report No. 2 Rate	Adjusted Rate
1	0-10	84.8847	50.6377
2	11-20	19.9048	19.9048
3	21-30	7.3331	7.3331
4	31-40	3.2568	3.2568
5	41-50	1.6143	1.6143
6	51-75	0.5587	0.5587

Source: Harland Bartholomew & Associates, Inc.

D. Population Estimates. The Bureau of Economic Analysis OBERS Report (1980) provides separate population growth rates for counties in metropolitan statistical areas (MSAs) and for counties in non-MSAs. All of the counties within the Norfork Lake day-use market area are located within three non-MSA OBERS projection areas. These non-MSA areas are referred to as "Fayetteville, Arkansas;" "North Little Rock, Arkansas;" and "Springfield, Missouri." (These non-MSA areas do not actually include population within the cities or MSAs of Fayetteville, Little Rock or Springfield.) Annual population increases per non-MSA area are shown in Table 4-04.

Table 4-04

ANNUAL POPULATION PERCENTAGE INCREASE FOR NON-MSA AREAS
Norfork Lake Market Area

	Year	Population Springfield Missouri Non-MSA		Population Fayetteville Arkansas Non-MSA		Population N.Little Rock Arkansas Non-MSA	
	1978	500,377		103,689		731,592	
Average Annual % Change*			0.13		1.69		0.54
	1985	505,100		115,945		759,290	
Average Annual % Change*			0.27		1.18		0.74
	1991	512,003		122,794		787,356	
Average Annual % Change*			0.20		0.80		0.62
	2000	521,996		132,655		836,000	

*Not cumulative.

Source: Bureau of Economic Analysis OBERS Report, 1980.

The population base for each day-use market area county was derived from the 1980 Census of Housing and Population. Day-use market area population projections for 1985, 1991 and 2000 were developed by applying the annual percentage increase figures presented in Table 4-04 to the 1980 base day-use market area population figures. (See Table 4-05.)

E. Visitation Projections. Day-use visitation generated within the 75-mile market area was calculated by multiplying each county's population projection (by zone) by the appropriate per capita use rate. By definition, this calculation identified 80 percent of the total day-use visitation. Therefore, the product was divided by .80 to identify 100 percent of the day-use visitation. At this point, it is necessary to account for 100 percent of total project visitation by adding on the 6.4 percent of use associated with overnight camping. This was

Table 4-05

DAY-USE MARKET AREA
POPULATION FORECASTS BY COUNTY

Norfork Lake
(1985, 1991 & 2000)

County	1980* Population	Population Projections 1985	1991	2000
Missouri				
Ozark	7,961	8,015	8,135	8,278
Howell	28,807	29,001	29,437	29,954
Taney	20,467	20,605	20,915	21,282
Douglas	11,594	11,672	11,848	12,056
Wright	16,188	16,297	16,542	16,833
Texas	10,535	10,606	10,765	10,954
Shannon	5,914	5,954	6,043	6,149
Oregon	10,238	10,307	10,462	10,646
Arkansas				
Baxter	27,409	29,676	31,969	34,280
Stone	9,022	9,264	9,659	10,196
Marion	11,334	12,272	13,220	14,175
Boone	26,067	28,223	30,404	32,601
Searcy	8,847	9,547	10,319	11,065
Van Buren	13,357	13,716	14,300	15,095
Cleburne	4,227	4,341	4,526	4,777
Independence	30,909	31,739	33,092	34,932
Randolph	16,834	17,286	18,023	19,025
Lawrence	4,612	4,736	4,937	5,212
Sharp	14,607	14,999	15,638	16,508
Izard	9,975	10,243	10,679	11,273
Fulton	10,768	11,659	12,559	13,467
Total	299,672	310,189	323,472	338,758

* Base population figures are from the 1980 Census of Housing and Population. (Adjusted to reflect 75 mile day-use market area.)

accomplished by dividing the total day-use figures by .936. The results of this process are shown in Table 4-06, and graphically illustrated by Figure 4-01. This analysis indicates that visitation to Norfork Lake will continue to be relatively stable, with slow to moderate increases through the year 2000.

4-04 DETERMINATION OF FACILITY NEEDS

A. Project Design Loads. The first step in determining specific facility needs at Norfork Lake involved the calculation of the project design load. Design load may be defined as the projected visitation which will occur on an average peak use day. A peak use day may be defined as any weekend day or holiday between April 1 and September 30. The annual total use for the project, based on 1985 visitation data, was 3,822,087 activity occasions. To calculate the total design load (TDL) for an average peak day, the following formula was applied:

$$TDL = \frac{D \times \% PS \times \% WE}{PD}$$

Where: TDL = Total Design Load

D = Demand (Existing or Projected Annual Attendance)

% PS = Percent of Annual Demand occurring during the peak season (69.74%)

% WE = Percent of peak season use occurring on weekends and holidays (60.00%)

PD = Number of peak days (weekend days and holidays) in the peak season (54 days)

Therefore, applying this formula to Norfork Lake we obtain:

$$TDL = \frac{3,822,087 \times .6974 \times .60}{54}$$

TDL = 29,617 activity occasions on an average peak day in 1985.

The same process was used to determine the total design load for Norfork Lake in 1991 and 2000. Estimated total design load for 1991 and 2000 was calculated as 31,360 and 33,169 activity occasions respectively.

The total design load was then used to calculate specific activity design loads (ADL). In order to establish the activity design loads, participation rates must be calculated. Participation rates for Norfork Lake were based on data provided by the 1985 user survey. (See Table 4-07.)

The projected activity design loads at Norfork Lake for the years 1985, 1991 and 2000 were calculated by multiplying total design load for each year times the individual participation rates. (See Table 4-08).

Table 4-06

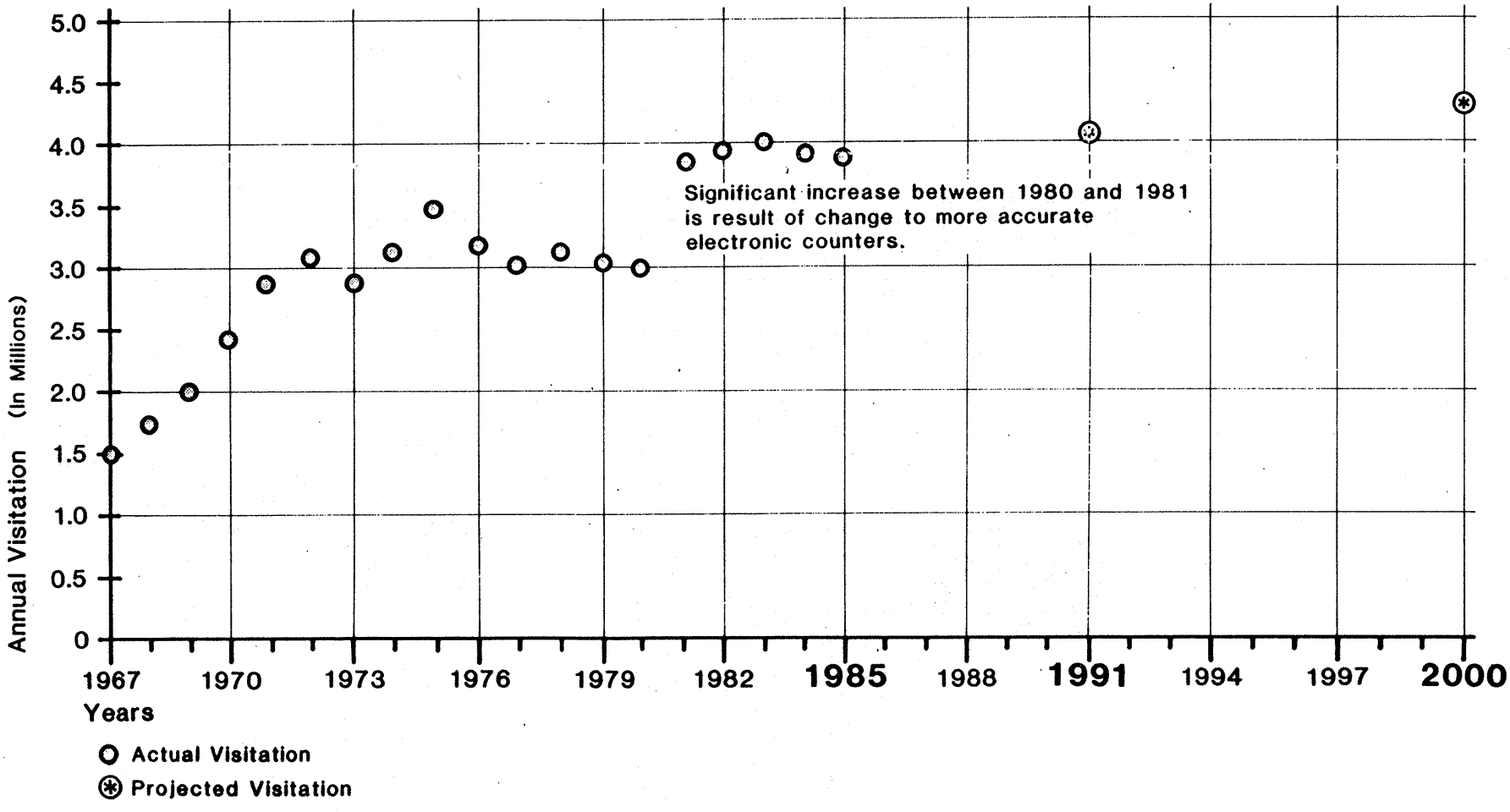
PROJECTED VISITATION LEVELS

Norfork Lake (1985, 1991 & 2000)

County	Zone	Per Capita Rate	Visitation Projections 1985	1991	2000
Missouri					
Ozark	1	50.6377	405,840	411,942	419,178
Howell	3	7.3331	212,667	215,864	219,656
Taney	6	0.5587	11,512	11,685	11,890
Douglas	4	3.2568	38,014	38,585	39,263
Wright	6	0.5587	9,105	9,242	9,404
Texas	6	0.5587	5,926	6,015	6,120
Shannon	6	0.5587	3,326	3,376	3,436
Oregon	4	3.2568	33,568	34,072	34,671
Arkansas					
Baxter	1	50.6377	1,502,735	1,618,838	1,735,839
Stone	3	7.3331	67,937	70,831	74,769
Marion	3	7.3331	89,988	96,941	103,947
Boone	5	1.6143	45,561	49,081	52,628
Searcy	4	3.2568	31,196	33,607	36,035
Van Buren	6	0.5587	7,663	7,990	8,434
Cleburne	6	0.5587	2,425	2,529	2,669
Independence	5	1.6143	51,237	53,420	56,390
Randolph	6	0.5587	9,658	10,069	10,629
Lawrence	6	0.5587	2,646	2,759	2,912
Sharp	5	1.6143	24,214	25,245	26,649
Izard	3	7.3331	75,113	78,313	82,667
Fulton	2	19.9048	232,064	249,994	268,062
80% Day-Use Visitation (within day-use market area)			2,862,393	3,030,396	3,205,250
20% Day Use (outside day-use market area)			715,598	757,599	801,312
6.4% Overnight Use			244,649	259,008	273,953
Total Annual Visitation			3,822,640 *	4,047,003	4,280,515

*Actual 1985 Visitations = 3,822,087.

Source: Harland Bartholomew & Associates, Inc.



NORFORK LAKE VISITATION LEVELS 1967–2000

Figure 4-01

Table 4-07

PARTICIPATION RATES
Norfork Lake (1985)

Activity	Participation Rate*
Camping	6.44%
Picnicking	7.43%
Boating**	41.78%
Swimming	22.11%
Hunting	1.72%
Sightseeing	39.96%
Fishing (Bank Only)	2.74%
Other	0.90%
Total***	123.08%

* Based on data from 1985 Norfork Lake User Survey.

** Includes pleasure boating (11.82%); water skiing (4.86%); and fishing (25.10%). It is estimated that 90% of all fishing at Norfork Lake occurs from boats and the remaining represents bank fishing.

*** A total percentage of greater than 100% indicates that visitors often engage in more than one activity while they visit the project.

Table 4-08

PROJECTED ACTIVITY DESIGN LOAD
Norfork Lake (1985, 1991 & 2000)

Activity	Participation Rate	Activity Design Load		
		1985	1991	2000
Camping	0.0644	1,907	2,019	2,136
Picnicking	0.0743	2,201	2,330	2,464
Boating	0.4178	12,374	13,102	13,858
Swimming	0.2211	6,548	6,934	7,334
Hunting	0.0172	509	539	571
Sightseeing	0.3996	11,835	12,531	13,254

B. Facility Needs. Activity design loads were used in combination with average group size and turnover rate standards (see Table 4-09) to calculate specific facility needs, using the following formula:

$$FN = \frac{ADL}{XG \times TR}$$

Where: FN = Facility Need
ADL = Activity Design Load (see Table 4-08)
XG = Average Group Size (see Table 4-09)
TR = Turnover Rate (see Table 4-09)

Table 4-09

AVERAGE GROUP SIZE AND TURNOVER RATE
Norfork Lake

Activity	Average Group Size*	Turnover Rate*
Camping	3.5	1.0
Picnicking	4.0	2.0
Swimming	3.0	3.0
Boating	3.5	50.0**
Hunting	3.0	1.3
Sightseeing	4.0	3.0

* Norfork Lake project staff have verified that numerous data entry errors in the 1985 visitor survey resulted in erroneous average group size and turnover rate information. Therefore, the values shown in this table were derived from an evaluation of known rates at similar Corps projects and discussions with project personnel.

** Normal launch lane turnover rate of 40.0 has been increased to 50.0 in recognition of increased efficiency of the existing dual lane ramps at many of the Norfork Lake recreation areas.

This formula was used to calculate facility needs at Norfork Lake for the years 1985, 1991 and 2000, as shown in Table 4-10.

The need for boat launch lanes has been reduced based on the assumption that a considerable portion of the boating demand is accommodated by rental or private boats that are already moored on the lake, and therefore do not require a launch lane. For the purpose of this study, it was assumed that 50 percent of the 1,404 available public boat mooring spaces are utilized on an average peak day, thereby accounting for 702 boats. These moored boats eliminate the need for 14 launch lanes (702 divided by 50 launches per day per lane). This adjustment has been included in the number of required lanes as shown in Tables 4-10 and 4-12.

C. Facility Supply and Additional Facility Requirements. The Corps of Engineers currently operates a total of 20 public recreation areas at Norfork Lake. An inventory of existing facilities provided by these areas is provided in

Table 4-10

FACILITY NEEDS

Norfork Lake (1985, 1991 & 2000)

Facility Needs - 1985

Activity	ADL	XG	TR	Facility Need
Boating*	12,374	3.50	50.00	57 Launch Lanes**
Hunting	509	3.00	1.30	131 Vehicles
Picnicking	880	4.00	2.00	110 Picnic Units***
Sightseeing	11,835	4.00	3.00	986 Vehicles
Swimming	6,548	3.00	3.00	728 Lineal Feet of Beach
Camping	1,907	3.50	1.00	545 Camping Units

Facility Needs - 1991

Activity	ADL	XG	TR	Facility Need
Boating*	13,102	3.50	50.00	61 Launch Lanes**
Hunting	539	3.00	1.30	138 Vehicles
Picnicking	932***	4.00	2.00	117 Picnic Units
Sightseeing	12,531	4.00	3.00	1,044 Vehicles
Swimming	6,932	3.00	3.00	770 Lineal Feet of Beach
Camping	2,019	3.50	1.00	577 Camping Units

Facility Needs - 2000

Activity	ADL	XG	TR	Facility Need
Boating*	13,858	3.50	50.00	65 Launch Lanes**
Hunting	571	3.00	1.30	146 Vehicles
Picnicking	986***	4.00	2.00	123 Picnic Units
Sightseeing	13,251	4.00	3.00	1,104 Vehicles
Swimming	7,334	3.00	3.00	815 Lineal Feet of Beach
Camping	2,136	3.50	1.00	610 Camping Units

* Boating includes boating, skiing and 90% of fishing.

** Launch lane facility needs have been reduced in consideration of demand met by marina slips and mooring spaces (see text).

*** Picnic ADL is based on 40 percent of total picnic activity, assuming 40 percent of demand should be met at designated day-use sites, 30 percent at multiple-use camping/picnic sites, and 30 percent in nonfacility areas (i.e. general open space).

Table 4-11

SUMMARY OF MAJOR FACILITIES AT
EXISTING PUBLIC RECREATION AREAS

Norfork Lake (October, 1986)

COE Public Recreation Area	Camp Unit	Picnic Unit*	Launch Lane	Beach (Lineal Feet)	Marina Slips	Marina Moorings	Picnic Shelters
Bidwell Point	48	6	2	150	—	—	1
Buzzard Roost	—	—	1	—	76	20	—
Cranfield	74	10	5	400	147	36	2
Curley Point	—	—	—	—	—	—	—
Gamaliel	28	4	1	100	135	—	1
Georges Cove	12	—	1	100	—	—	—
Hand Cove	—	—	1	—	—	—	—
Henderson	38	6	2	75	192	—	1
Howard Cove	12	—	1	—	120	5	—
Jordan Park	38	6	2	200	43	6	1
Liner Creek**	—	—	1	—	—	—	—
Panther Bay	28	—	7	100	197	25	—
Pigeon Creek	5	—	1	—	—	—	—
Quarry Cove	80	16	5	150	120	38	2
Red Bank	12	—	3	—	—	—	—
Robinson Point	102	6	2	150	—	—	1
Talbert	—	—	1	—	—	—	—
Tecumseh	7	—	1	—	—	—	—
Tracy	7	—	1	—	186	20	—
Udall	7	—	2	—	36	2	—
Wood's Point	11	—	1	—	—	—	—
Total	509	54	41	1,425	1,252	152	9

*Note: Picnic units are limited to the number of picnic tables provided in shelter structures. There were no individual designated picnic units at Norfork Lake at the time this plan was prepared.

**Limited boat access only (not designated park area).

Table 4-12

SUMMARY OF ADDITIONAL FACILITY REQUIREMENTS
THROUGH 2000

Norfork Lake

Activity Unit	No. of Existing Facility Units (1985)	Existing Facility Need	Additional Facility Requirements	1991 Facility Need	1991 Additional Facility Requirements	2000 Facility Need	2000 Additional Facility Requirements
Camping Units	488 (Units)	545	57	577	89	610	122
Picnic Units	54 (Units)	110	56	117	63	123	69
Swimming Beach (Lineal Feet)	1,425 (Lineal Feet)	728	+697 *	770	+655 *	815	+610 *
Boating** (Launch Lanes)	41 (Launch Lanes)	57	16	61	20	65	24

* Calculations indicate a surplus of beach area throughout the projection period. However, all beach areas are currently located within camping areas. There is a moderate need for new designated day-use beach facilities; and there is also a need for relocation and a modification of some existing beach areas to reduce use conflicts.

** In addition to the 41 COE public boat launch lanes, there are at least 10 to 12 small "private" lanes around the lake that are used by patrons at local resort operations. These facilities reduce the need for new launch lane facilities to some extent. In addition, Ozark County has a license to operate a one-lane launch ramp located between Udall and Tecumseh recreation areas; and Wilderness Point area (private concessionaire) also provides a one-lane boat launch ramp.

Table 4-11. As a final step in this analysis, Table 4-12 summarizes current and projected additional facility requirements for the project. A detailed discussion of facility distribution, conditions and other site factors is provided in Chapter 6, Facility Development Plan.

It should be noted that the facility need calculations and other projections included in this chapter are based on planning judgment and assumptions. Therefore, these data should only be used as general guidelines for facility development. It is recognized that final design and construction of facilities at each recreation area must also consider site resource capacities, budgetary constraints, goals of supporting agencies, operational capabilities, and actual future demand levels.

4-05 REGIONAL RECREATION RESOURCES

There are several major public recreation resources within the Norfork Lake primary market area (75 mile radius) as shown on Plate 2-01. These resources include the Buffalo National River, two scenic riverways (Eleven Point and White Rivers), and three major lake projects (Greers Ferry, Bull Shoals, and Table Rock Lake).

It is also significant to note that there is one major, privately operated camping area at Norfork Lake that provides facilities similar to those provided by the Corps of Engineers. This private area is known as Wilderness Point, and it is partially located on project lands directly across from the south shore of the Henderson Point Recreation Area.

There are a considerable number of additional public recreation resources within the Norfork Lake secondary market area (75-125 mile radius). Resources in this secondary zone include: eight scenic Ozark rivers (St. Francis, Gasconade, Black, Current, Jack's Fork, Buffalo, Cache and Spring Rivers); ten additional state parks; and four major lakes (Dandanelle, Beaver, Clearwater and Ozark). In addition, several smaller lakes, constructed by private power companies and municipal water companies, provide limited recreational opportunities for residents of the area.

The number and variety of recreational opportunities within the Norfork Lake market area draws many visitors and some permanent residents to the area. However, this visitation is widely dispersed among the various available areas. Furthermore, since most of the major public areas have been in existence for some time, the general mix of recreation visitation among the available areas is relatively stable. This is evident when we examine prior visitation trends at Norfork Lake (as discussed in Section 4-03), where we see a general leveling off of visitation.

4-06 REGIONAL DEMAND FOR RECREATIONAL FACILITIES

Regional demand for outdoor recreation facilities within the Norfork Lake market area was examined through the use of the 1985 Arkansas Statewide Comprehensive Outdoor Recreation Plan (SCORP) and the 1980 Missouri Statewide Comprehensive Recreation Plan. These reports contain general data on facility supply and demand on a statewide and regional basis.

The Norfork Lake market area encompasses two regional districts in the Arkansas SCORP, and one in the Missouri Plan. The Arkansas districts include the Northwest Arkansas Economic Development District (NWAEDD) and the White River Planning and Development District (WRPDD). The Missouri regional district is the South Central Ozarks region.

While the Arkansas SCORP shows a statewide shortage of 1,014 developed campsites in 1984, the regions in which Norfork Lake is located show a surplus of 1,099 campsites. The 1990 projections estimate a shortage of 3,046 campsites statewide and a surplus of 424 for the NWAEDD and WRPDD regions, indicating a substantial increase in the use of existing sites in the Norfork Lake region. The Missouri SCORP indicates a shortage of campsites statewide, with no mention of any region having a surplus of campsites. The use of nearby recreational facilities in northern Arkansas by Missourians contributes significantly to the demand for facilities at Norfork Lake.

A major shortage of picnic tables and picnic shelters are indicated in both SCORP plans. The overall need is for approximately 200 tables and 50 shelters in the South Central Missouri Ozark region, while the two Arkansas districts report a shortage of approximately 500 picnic tables.

CHAPTER 5

COORDINATION WITH OTHER AGENCIES

CHAPTER 5

COORDINATION WITH OTHER AGENCIES

5-01 GENERAL

The coordination of planning efforts directed toward the future operation, management and development of Norfork Lake represents an important aspect of the master planning process. During the preparation of this Master Plan, coordination letters were sent to several agencies to inform them of the process, and request their comments. Specific agency contacts have included:

- U.S. Fish and Wildlife Service
- Arkansas Game and Fish Commission
- Arkansas Natural Heritage Commission
- Missouri Department of Natural Resources
- Arkansas Department of Parks and Tourism

Copies of interagency correspondence have been included as Attachment A to this Master Plan.

An initial public workshop was held in Mountain Home on February 23, 1987. Advance notices were sent to over 150 area residents and agency representatives, and the workshop was announced by extensive use of the local media including a formal notice in the area newspaper. Approximately 119 citizens attended this workshop.

The Consultant and Corps of Engineers representatives described the master planning process and specific recommendations for the future development or modification of the existing public recreation areas. Comment forms were provided and most participants returned these forms, providing a record of area issues and concerns. This meeting was not a public hearing; therefore, a complete meeting transcript was not provided. However, Attachment A to this Master Plan includes a general summary of public input generated by this initial meeting.

A second public meeting was held in Mountain Home on September 15, 1987 to describe the Final Draft Plan and solicit comments to the plan. Over 700 meeting announcements were mailed to area residents, the Congressional delegation, and agency representatives. Approximately 350 persons attended the meeting. The primary comment at the meeting was to continue use of the camping areas for picnicking and swimming. The public was encouraged to use the planned day-use facilities, but for those parks lacking separate day-use facilities, day use could continue.

The Final Draft and Final Plan were adjusted in many cases in direct response to public comments provided at these meetings.

CHAPTER 6

FACILITY DEVELOPMENT PLAN

CHAPTER 6

FACILITY DEVELOPMENT PLAN

6-01 INTRODUCTION

It is the purpose of this chapter to analyze the data inventory presented in Chapters 2, 3 and 4, and agency/public input, as described in Chapter 5, to formulate sound Master Plan concepts. A statement of Resource Use Objectives will guide the design, development and management of Norfork Lake resources to meet their highest and best use, while efficiently meeting the needs of the public to be served. Other major components of this chapter include an analysis of the existing and proposed distribution of recreation facilities, conceptual site plans for each recreation area, and a general discussion of a major proposed intersite trail system. The concluding section of the chapter identifies general implementation priorities.

6-02 PROJECT LAND AND WATER USE ALLOCATIONS

The scope of work for this Master Plan did not include analysis or updating of land and water use areas, or the preparation of a "Resource Use Plan," as described in Draft ER 1130-2-435. These elements may be added to this plan at a later date. In the interim, the prior land use plan (prepared in 1972) shall remain in force. (See Attachment B for general considerations for use when the Land Use Plan is updated.)

6-03 RESOURCE USE OBJECTIVES

A. General. The following resource use objectives were developed in accordance with DRAFT ER 1135-2-435 and ER 1105-2-167, which provide guidance for all Corps administered lake projects. These ERs define resource use objectives as "clearly written statements, specific to a given project, which specify the attainable, publicly acceptable options for resource use determined from study and analysis of resource capabilities and public needs."

The following resource use objectives reflect the results of analysis of natural, cultural and recreational resource opportunities, constraints and needs at Norfork Lake. These objectives provide broad guidance for the identification of future recreational development plans at the project. The objectives are intended to provide for optimal development, relocation and restoration of recreation facilities with limited negative impacts to the environment, and attainment of reasonable operating efficiency.

Each objective is presented in a four-part format, including: (1) statement of the objective, (2) rationale, (3) implementation measures, and (4) positive and negative impacts.

B. Objectives

OBJECTIVE 1. Consolidate and improve camping facilities throughout Norfork Lake and enhance fee collection potential.

Rationale. The recreation needs analysis in Chapter 4 indicates that only 122 additional camp units will be required to meet Year 2000 facility needs. Since there are several existing park areas that can be expanded to meet this additional demand, major new recreation areas do not seem to be warranted on the basis of camping facility needs. However, there are a considerable number of deteriorated existing camp units. Many units are subject to periodic peak season flooding, and there are numerous small, relatively isolated camping areas that are underutilized and/or too costly to operate and maintain. There are also a large number of Class "C" camp units that only offer minimal services and potential for fee collection. Where possible, Class C units will be upgraded to improve camping conditions and enhance revenue potential.

Implementation. In order to implement this objective, the site plans in this document include recommendations for consolidation or elimination of selected marginal camping areas, expansion of several major areas to maximize operating efficiency, restoration and upgrading of deteriorated camp units, improved fee collection concepts, and reduced user conflicts.

Impacts

Positive:

- Reduced site impacts as a result of site restoration work.
- More efficient use of recreation facilities and areas.
- Increased user fees and improved operational efficiency.

Negative:

- Disruption of historic use patterns.
- Loss of a portion of the original site investment (i.e., nonrecoverable facility components).

OBJECTIVE 2. Develop several new exclusive day-use facility areas to meet area needs and reduce conflicts at existing camping areas.

Rationale. No dedicated day-use areas presently exist at Norfork Lake and all existing day-use activity is accomplished in existing camping areas. Picnic facilities are limited to tables in picnic shelters, and a moderate demand for day-use activities results in user conflicts and loss of revenue at existing camp sites.

Implementation. Create new day-use areas at several existing recreation areas, and redesign existing recreation areas to separate camping from day-use wherever possible.

Impacts

Positive:

- Reduction of conflicts and impacts between day-use and camping.
- Enhanced day-use facilities in response to recognized public need.
- Potential increase in revenue at camp sites.

Negative:

- Change in historic use patterns.
- Increased operation and management costs associated with exclusive day-use areas where no fees will be collected.

OBJECTIVE 3. Expand and upgrade launch lane facilities, including new launch lanes and high water access points.

Rationale. The facility need projections in Chapter 4 indicate a need for approximately 20 new boat launch lanes to meet 1992 demands. However, analysis of existing conditions at Norfork Lake indicate that a considerable portion of this need is met by a number of lanes that are maintained by other entities, including a lane operated by Ozark County, a privately-owned lane at the Wilderness Point camping area, and 10-12 other lanes that are operated and maintained by resort operators adjacent to the project. Analysis also indicates that siting of additional launch lane facilities at Norfork Lake is very difficult due to steep topography, limited space for related car/trailer parking, and relatively large pool level fluctuations.

Implementation. Additional launch lane facilities have been recommended at a number of recreation areas consistent with site limitations. Where possible, these lanes have been located to help distribute boater use throughout the lake, reduce congestion, and improve high water access potential.

Impacts

Positive:

- Enhanced access for pleasure boaters, fishermen and skiers.
- Enhanced high water access.

Negative:

- Some increase in lake boat traffic will occur as additional lanes are constructed. However, construction of the maximum number of lanes proposed in this plan will still result in a total boating use level that is considerably under the carrying capacity of the lake.

OBJECTIVE 4. Provide several separate day-use beach areas to reduce conflicts with camping area beaches, launch ramps, parking and marina operations.

Rationale. Recreation facility analysis indicates a surplus of beach facilities at Norfork Lake. However, there are no separate day-use beaches, and major use conflicts occur at some recreation areas.

Implementation. Recommendations have been included for the construction of several new day-use beach areas. Once these facilities are completed, day-use visitors can be directed out of camping areas to the new day-use sites.

Impacts

Positive:

- Reduced conflicts with a resulting improvement in overall beach quality and improved swimming safety in some areas.
- Improved day-use facilities.

Negative:

- Redirection of day-use swimmers to new areas, changing historic use patterns.
- Increased operating costs associated with maintenance of new day-use areas.

OBJECTIVE 5. Preserve, protect and interpret the historic and archaeological resources that occur on project lands.

Rationale. Several studies have been conducted and a number of significant sites have been located on project lands with a few sites near existing recreation areas.

Implementation. Known historic and archaeological resources were noted, considered and avoided in all recreation area plans. The Operation Management Plan (OMP) may address a potential interpretive program consistent with ER 1130-2-401 to preserve and interpret cultural resources at Norfork Lake.

Impacts

Positive:

- Preservation and protection of potentially valuable historic and archaeological sites.
- Enhanced interpretation of cultural resources.

Negative:

- None anticipated.

OBJECTIVE 6. Assist appropriate state and regional authorities in establishing the Norfork Lake section of the Ozark and Ozark Highland Trails.

Rationale. Development has begun on the Ozark and Ozark Highland Trails in other sections of Missouri and Arkansas. Establishment of all 62 miles of this interstate and intersite trail system would meet future hiking facility demand and provide public access to remote "natural" areas.

Implementation. Cooperate with appropriate authorities in design and construction of Norfork Lake section of the trail. It is anticipated that volunteer labor will be used to construct most of this trail system.

Impacts

Positive:

- Development of intersite trail facilities.
- Key link in interstate trail system.

Negative:

- Increased operation and maintenance costs.

OBJECTIVE 7. Adopt a management program which will continue to provide for enhancement and use of forest, fish and wildlife resources at Norfork Lake.

Rationale. Norfork Lake and the North Fork River represent a significant sport fishery. The Norfork National Fish Hatchery adds to the attractiveness of the area for sport fishing. The known number of rare or endangered plant and animal species, as discussed in Chapter 2, requires that the area flora and fauna be properly managed and protected.

Implementation. The Operations Management Plan will address specific natural resource management techniques and/or policies to be applied at Norfork Lake.

Impacts

Positive:

- Protected plant and animal species.
- Increased facilities for hunters and fishermen.

Negative:

- Intensive management activities will require increased operating budgets.

OBJECTIVE 8. Preserve and protect the unique natural quality of Norfork Lake.

Rationale. Norfork Lake is characterized by relatively steep terrain, limited regional accessibility, and high aesthetic values. The lake has traditionally attracted a high percentage of visitors who are looking for a more rustic outdoor recreation experience, at smaller and more isolated recreation areas.

Implementation. The recreation area plans presented in this document attempt to balance the desire to maintain traditional use patterns at Norfork Lake with the need to improve operating efficiency. Recommended changes in historic use patterns have been phased to ensure that reasonable recreation use alternatives are provided prior to closing or consolidating existing areas. Recommendations have also been included to further enhance the aesthetic value of existing recreation areas.

Impacts

Positive:

- Preserved or enhanced remote and rustic character of many of the public recreation areas.

Negative:

- None anticipated.

6-04 EXISTING RECREATION AREA PLAN CONCEPTS

A. General. There are 20 existing recreation areas at Norfork Lake that are currently operated by the Corps of Engineers. All recreation areas are located in Baxter and Fulton Counties in Arkansas, except Udall Park, Tecumseh Park, and Liner Creek Access Point, which are located in Ozark County, Missouri. The site location key map identifies each site and shows its location in relation to other sites at Norfork Lake. (See Plate 6-01.) Ten of these sites include marina concession operations operated under specific lease agreement terms with the Corps of Engineers.

This section presents conceptual site development plans which will identify the type, number and general location of new facilities. The concept site plans will serve as the basis for the preparation of more detailed site and construction plans on an as required basis, and the preparation of a detailed Operational Management Plan (OMP).

Part A of each site plan discussion presents a narrative description of the existing recreation area including its general location, size, accessibility and unique features or characteristics.

B. Site Analysis. The site analysis narrative for each recreation area provides a summary of site constraints and opportunities. This analysis was accomplished through an on-the-ground survey of each site and the development of a composite site map. Four blueline working file maps (which are available for review at the Corps of Engineers District Office in Little Rock, Arkansas) were developed and used to create a composite site analysis map for each recreation area.

Resource characteristics evaluated for each recreation area by the working file maps included:

1. Slope Analysis. This working file map series classified the topography within each recreation area into one of four ranges (0%-6%, 6%-12%, 12%-25% and 25% or more). A development suitability matrix was provided on each slope map to indicate facilities suitable for development in each slope range.

2. Soils Analysis. The working file soil maps were prepared to illustrate the specific location and type of soils within each area. Areas susceptible to erosion and areas requiring shoreline stabilization to protect project resources and the public were noted. The characteristics

of each single soil type were summarized in a matrix attached to each map, and development limitations were noted.

3. Vegetation Analysis. This map series was prepared to illustrate general vegetation cover types including upland hardwoods, bottomland hardwoods, pines, open lands and mixed pine/hardwood areas. Data for these maps were obtained from high level aerial photographs and limited field observations. Important tree stands, unique habitats and rare or endangered vegetation types were also noted on these maps.

4. Facility Analysis. A "facility analysis" working map series was prepared to identify facility type, quantity and condition; opportunities for improvement; and factors that limit future development potential. The facility analysis maps were prepared based on information contained in prior studies and reports, as well as an on-the-ground inventory of all existing facilities.

5. Composite Site Analysis Maps. Information gathered from these working file maps was compiled and analyzed to create a composite site analysis map for each recreation area (as included in this Master Plan). The composite analysis maps represent a summary of features that were considered to be of most importance to the planning process for each area. However, the reader should refer back to the working file maps for specific site details.

The graphic technique applied on the composite site analysis maps were developed to highlight areas that are most suitable for development. Therefore, the "darker" the site analysis features appear (in terms of cross-line hatching), the less suitable that area is for intensive development. Positive or unique features were generally indicated with a note.

C. Design Intent. The design intent is a short narrative describing in basic terms the overall plans for each site. In many cases, recommendations have been made to redesign (through relocation or rehabilitation) existing recreation areas. The primary considerations in the redesign of existing recreation areas were to gain greater control over use of the areas, to eliminate conflicts between uses, and to consolidate facilities in order to reduce operation and management costs.

D. Proposed Facilities. All proposed facilities are divided into two categories. The first category includes the "Five Year Initial" Development Plan. The five-year plan is designed to meet short- and mid-term public needs, reduce use conflicts, improve safety, improve operational efficiency, and improve revenue generation. The second category, the "Future Development" Plan is generally limited to areas where major expansion could take place adjacent to an existing recreation area to meet long-range recreational needs. Proposed facilities are discussed in general terms in the narrative text under the "Design Intent" heading. The reader should refer to the graphic plates for a complete listing of existing and proposed facilities.

The major intent of the proposed development plans is to indicate the general potential of each site for development, to establish a logical pattern and distribution of facilities and activities throughout the project, and to identify land areas that should have a change in recreational use emphasis.

Plate 6-02, the Facility Distribution Map, provides an overview of the distribution of various types of recreational facilities throughout the project area. Graphic presentation of all future facilities shown on the site plans has been limited to bubble diagrams and major access road alignment. This conceptual approach is consistent with current Corps of Engineers guidance.

E. Recreation Area Recommendations

Public recreation areas are presented in alphabetical order as follows:

	Area Name	Plate Numbers	Text Page
1.	Bidwell Point	6-03 A & B	57
2.	Buzzard Roost	6-04 A & B	59
3.	Cranfield Park	6-05 A & B	61
4.	Curley Point Park	6-06 A & B	64
5.	Gamaliel Park	6-07 A & B	66
6.	Georges Cove Park	6-08 A & B and 6-09 A & B	68
7.	Hand Park	6-10 A & B	70
8.	Henderson Park	6-11 A & B	72
9.	Howard Cove	6-12 A & B	75
10.	Jordan Park	6-13 A & B	77
11.	Newton Landing	None	79
12.	Panther Bay Park	6-14 A & B	80
13.	Pigeon Creek Park	6-15 A & B and 6-16 A & B	82
14.	Quarry Cove Dam Area	6-17 A & B and 6-18 A & B	85
15.	Red Bank Park	6-19 A and B	89
16.	Robinson Park	6-20 A & B	91
17.	Talbert Park	6-21 A & B	94
18.	Tecumseh Park	6-22 A & B	95
19.	Tracy Park	6-23 A & B	97
20.	Udall Park	6-24 A & B	99
21.	Woods Point Park	6-25 A & B	101

1. BIDWELL POINT

(Plates 6-03A and 6-03B)
(Photographs 6-01 and 6-02)

a. General Description. This area is located at the confluence of the Bennett's Bayou Arm of the lake, and is situated on a peninsula about one mile long and one-fourth mile wide. There are about 180 acres of land above the top of the flood control pool. Direct access via State Highway 101 makes this park very popular, especially since completion of the Highway 101 bridge to Mountain Home and the Highway 62 bridge across the lake. Its central location and abundant facilities, including Class B+ camp sites, picnic shelters, swimming beach, playground, change house and boat launch ramp, make Bidwell Point one of the most visited recreation areas on Norfork Lake.

b. Site Analysis

- Soils and slopes along sides of peninsula restrict future development. The central portion of the peninsula is generally suitable for new development, but water access would be severely limited.
- Park is heavily wooded with hardwoods and eastern red cedar.
- Campground roads lack a hierarchy of circulation which can be confusing to first-time visitors.
- Change house by beach is frequently flooded. Chemical toilets are provided for beach visitors.
- There is insufficient overflow parking for cars and trailers (see Photograph 6-02), contributing to severe site impacts around several camp units.
- Majority of camp units are in good to excellent condition. Several units adjacent to the beach are frequently flooded. Some camp sites require minor restoration to reduce site impacts.
- Camp facilities are heavily used for day-use activities, resulting in conflicts and loss of potential camping fees.
- Sanitary facilities are in good condition and sited to meet camper requirements. Facilities vary in construction material, roof shapes, and screening treatment.

c. Design Intent. Emphasis will be placed on improving overnight use facilities at this recreation area. All improvements have been included as part of the five-year initial development plan. Specific site improvements are listed and illustrated on Plate 6-03B.



Photograph 6-01

Entrance station at Bidwell Point creates positive image and provides for excellent traffic control.



Photograph 6-02

Boat launch area at Bidwell Point has inadequate parking area.

2. BUZZARD ROOST PARK

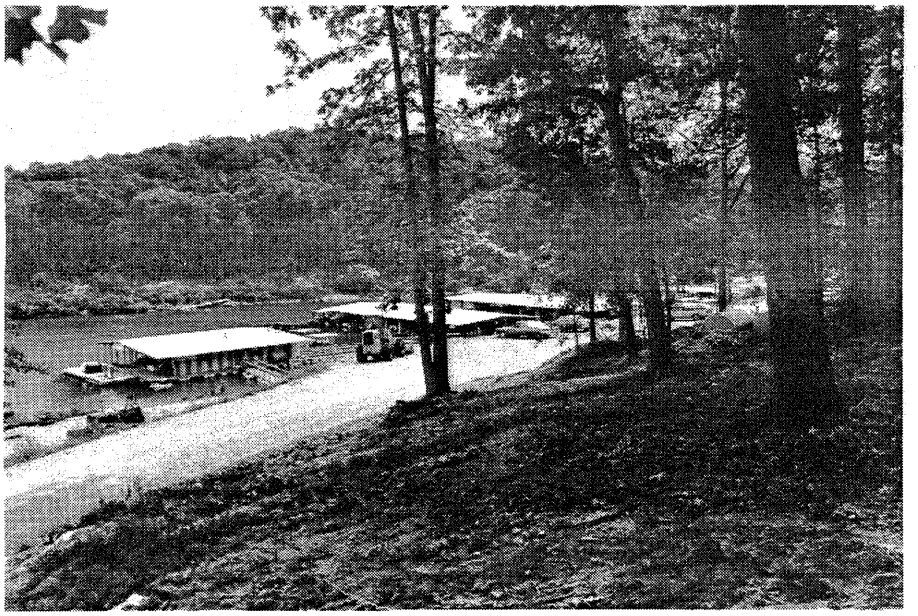
(Plates 6-04A and 6-04B)
(Photographs 6-03 and 6-04)

a. General Description. This park is located at the end of a paved road about four miles east of Mountain Home, Arkansas. Buzzard Roost Park has been popular as a boat launching site, with accessibility to two large embayments of the west side of the lake, lying just south of Highway 62. The area contains about 315 acres above the top of the flood control pool. Facilities include launch lane, marina and permit only camping sites.

b. Site Analysis

- This site is not suitable for development of significant day-use or camping facilities due to its small size, steep topography, and soil constraints.
- The area is heavily wooded with mixed hardwoods.
- There are remnants of a number of old camp units in this area.
- Existing restroom was sited to serve the camp units and should have better access from the parking areas and marina facilities.
- The existing launch ramp and parking area are subject to periodic flooding.
- A gravel high water parking area has recently been constructed to serve the marina and launch ramp. The soil above it is easily erodible.
- The launch ramp is of inadequate size to handle existing demand.

c. Design Intent. The abandoned campsite remnants in this area should be removed, and the area relandscaped to eliminate unauthorized camping at this recreation area. The plan recommends paving of the new gravel parking lot and related access road, and addition of one boat launch lane. The area should then be maintained as a public access point and marina concession. All recommendations are to be accomplished as part of the five-year initial development program.



Photograph 6-03

Marina and new high water parking lot
at Buzzard Roost Park



Photograph 6-04

Abandoned camp unit remnants to be
be removed at Buzzard Roost Park

3. CRANFIELD PARK

(Plates 6-05A and 6-05B)
(Photographs 6-05 and 6-06)

a. General Description. This park is located on the western shore of the lake at the mouth of Pigeon Creek Arm, about 19 miles upstream from the dam. The area contains approximately 345 acres above the top of the flood control pool. Access is by way of FAS Road 16 from U.S. Highway 62. The Mountain Home municipal water intake structure is situated near the westward cove. Facility attractions include camp units (with electric service), a large sand beach, lakeside amphitheater, commercial boat dock, multiple launch ramps and a fishing dock.

b. Site Analysis

- The undeveloped areas of the park have severe to moderate soil and slope restrictions for new development. Existing facilities have been located in areas of moderate limitations.

- Existing camping road circulation is confusing and congested. Some roads are in poor condition and poorly aligned to accommodate camp sites.

- Many of the existing sites are severely deteriorated and lack adequate parking and impact areas. This has resulted in severe deterioration and erosion around existing trees.

- Due to the popularity of this park for day use, facilities are frequently used at or beyond capacity. Lack of parking restrictions and adequate parking areas cause severe site impacts, increased maintenance fees, and reduced fee collection.

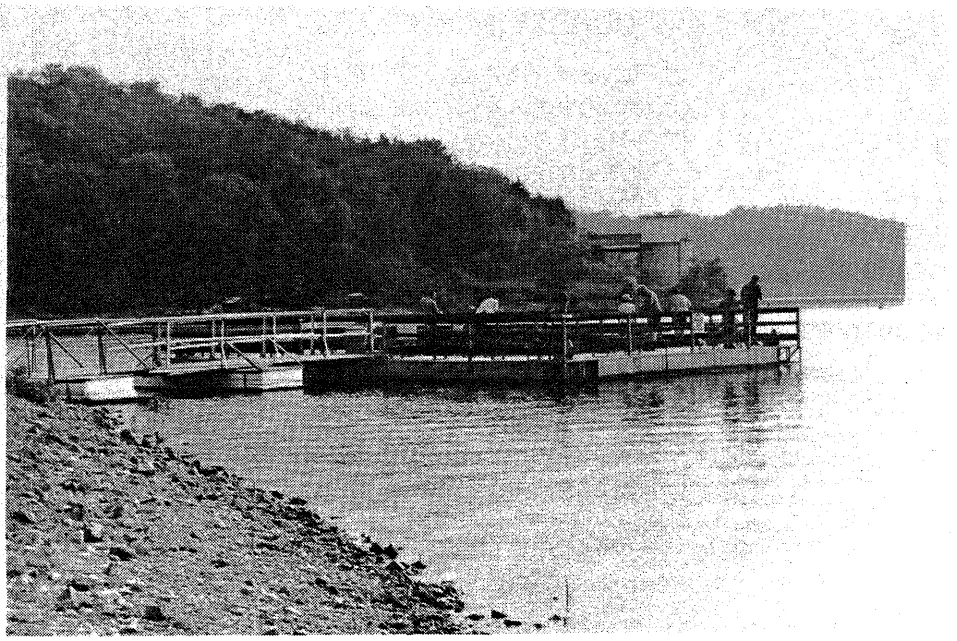
- Existing lakeside shelter is frequently flooded and should be removed or relocated.

- Park sanitary facilities are in good repair and sited to serve a majority of users.

- The causeway to the campground floods at EL. 561.72 and closes the camping area, resulting in loss of fee collection. However, to make the park available during high water, the causeway would have to be raised to an optimum elevation of 573 or above. Based on the infrequency of pool elevations at this level, cost of construction to raise the causeway, and the impact it would have on adjacent facilities, it does not seem feasible to elevate this causeway.

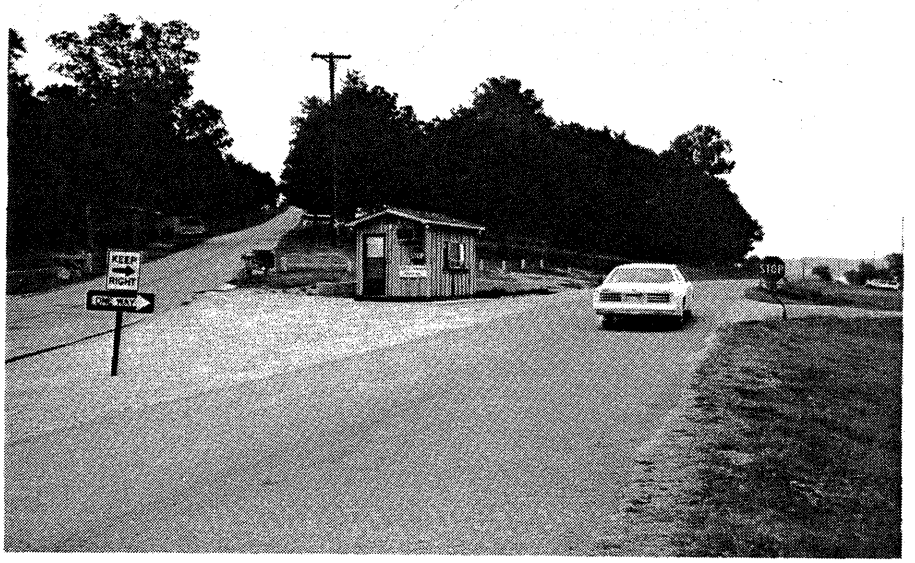
- Marina parking is inaccessible during high water and is inadequate in terms of size. However, the site does not lend itself to major parking area expansion.

c. Design Intent. Recommendations for this area are designed to separate day-use and camping areas, improve operating efficiency, and reduce negative site impacts. Specific five-year and future development recommendations are listed and illustrated on Plate 6-05B.



Photograph 6-05

Fishing dock is accessible to handicapped and is a popular feature at Cranfield Park.



Photograph 6-06

Existing entrance road configuration at Cranfield Park can be modified to separate day-use visitors from campers to reduce site conflicts and congestion.

4. CURLEY POINT PARK

(Plates 6-06A and 6-06B)
(Photographs 6-07 and 6-08)

a. General Description. This area is situated on the south side of the Big Creek Arm of the lake, about two miles upstream from the confluence of Brushy Creek. There are approximately 215 acres of land above the top of the flood control pool. Access is provided by a gravel road which runs approximately 10 miles from U.S. Highway 62. No physical facilities exist, although camping by permit has been allowed in the past.

b. Site Analysis

- The area consists of two peninsulas with the longer peninsula being 500 feet wide and 2,400 feet long.
- The smaller peninsula is relatively flat and subject to frequent flooding.
- Site configuration, size and other physical characteristics severely limit future development of the area.
- There are remnants of several concrete tables in the area which contribute to negative appearance.
- Area is heavily used as a lake access point by adjacent property owners, but the area does not provide a permanent launch ramp and parking area.

c. Design Intent. Recommendations for this area are designed to provide adequate boat launching facilities for lake access. Use of the area for camping is not recommended and table remnants should be removed from the site.



Photograph 6-07

The Curley Point area is undeveloped, but local residents use the natural gravel beach for boat access.



Photograph 6-08

Abandoned picnic sites at Curley Point attract unauthorized use and should be removed.

5. GAMALIEL PARK

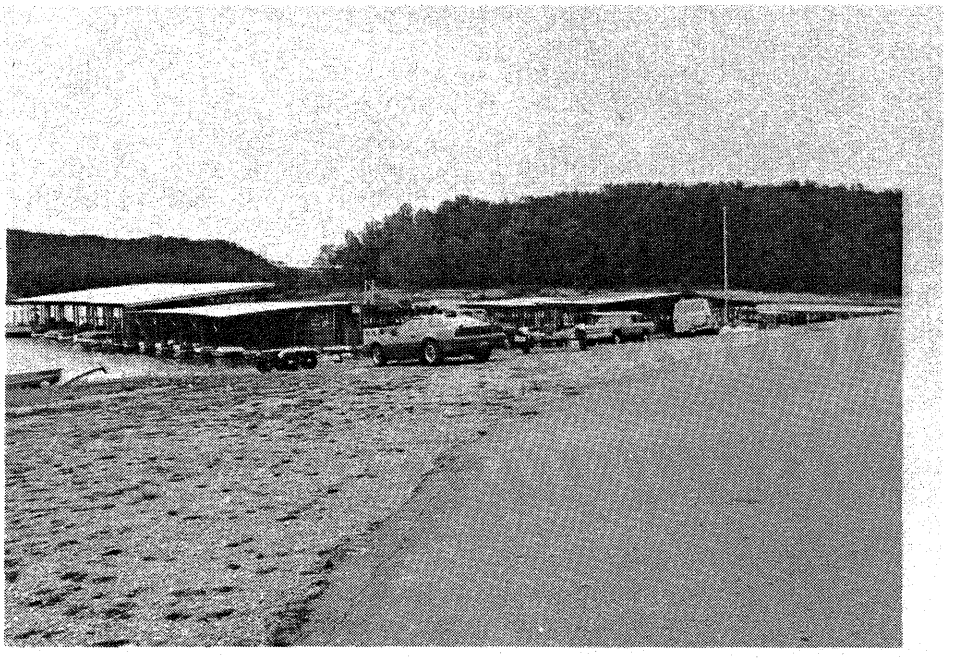
(Plates 6-07A and 6-07B)
(Photographs 6-09 and 6-10)

a. General Description. This area, containing approximately 230 acres above the top of the flood control pool, is located on the west shore of the Bennett's Bayou Arm of the lake about 18 miles upstream from the dam. Access is by way of two miles of paved road from Highway 101, about one mile south of the town of Gamaliel. Facilities available include a commercial boat dock, beach, campgrounds, picnic facilities and launch ramp. The terrain of the area is very well suited for development of separated facilities, as well as expansion of existing facilities.

b. Site Analysis

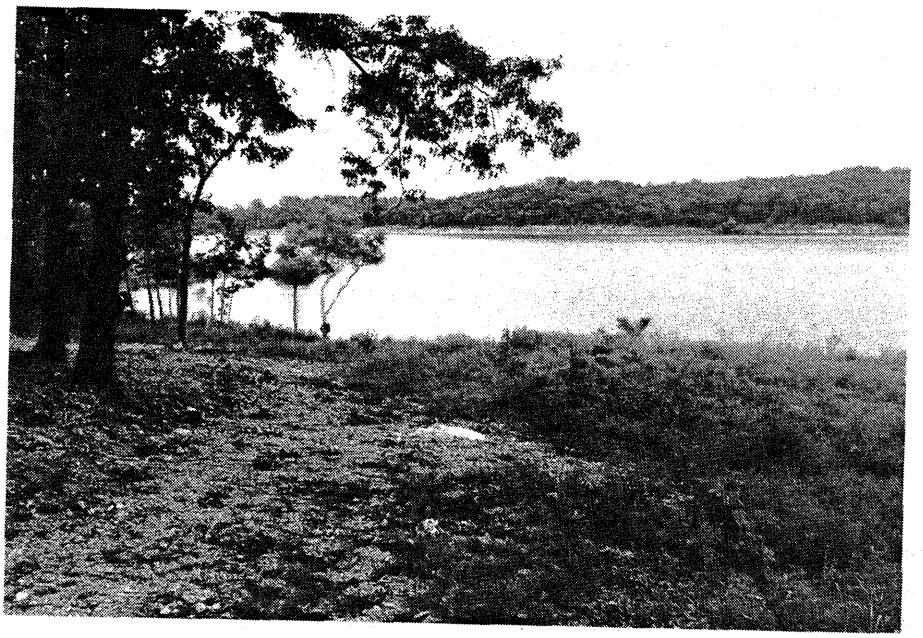
- o With gentle sloping land and moderate soil constraints, several areas are suitable for new development.
- o The area is characterized with moderate to heavy hardwood tree cover.
- o Road circulation is well defined and provides good separation between marina/boat launch area and main camping area.
- o Most of the camp units require trailer parking pads and hardened impact areas to reduce site impacts.
- o There is insufficient parking for marina, resulting in overflow parking on interior circulation roads. Marina parking is a 100 percent non-Federal cost.
- o Existing launch ramp is in poor condition and inadequate to handle existing and future demand.
- o Beach location adjacent to launch ramp results in a safety hazard and area congestion. Parking area is shared by swimmers and boat launching activities and is inadequate to handle demand.
- o Sanitary facilities are well sited and in good condition but differ in construction material and treatment. Unit in larger camping area provides shower facilities for campers.
- o Portable toilet units must be provided at the beach for swimmers' use.

c. Design Intent. The concept for this area involves increasing the number of camp units to improve operational efficiency and establish Gamaliel as a key anchor park in this area of Norfork Lake. Specific recommendations have also been made to reduce or eliminate site conflicts or safety problems as specified on Plate 6-07B.



Photograph 6-09

The parking lot at Gamaliel Park is inadequate to meet needs of the marina, boat launch lane and beach area.



Photograph 6-10

Proposed beach area at Gamaliel Park

6. GEORGES COVE PARK

(Plates 6-08 A and B; 6-09 A and B)
(Photographs 6-11 and 6-12)

a. General Description. This well used area is situated on the west side of the lake, and access is provided by a gravel road extending from State Highway 342. The park has 600 acres of land above the top of the flood control pool. This land area is in the form of two peninsulas, separated by a deep cove. Existing facilities are limited to the northernmost peninsula and include a boat launch lane, swimming beach and camping sites.

b. Site Analysis

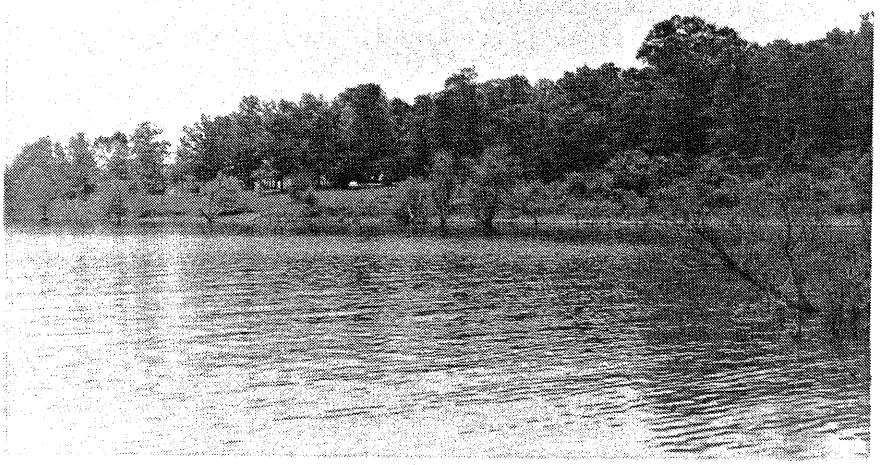
- Slopes are flat to moderate on the northern peninsula and have potential for future expansion of camping facilities. Moderate to steep slopes exist on the southern peninsula.
- Soils have moderate to severe limitations for development due to depth of bedrock and slow percolation.
- Most of the site is covered with shortleaf pine.
- Existing facilities are inadequate to handle current use levels.
- Boat launch ramp is in poor condition and inadequate in size to meet demand.
- Gravel parking area is insufficient in size and location for boat launch and swimming beach.
- Corrugated metal pit toilets above beach are unique but are not compatible with architectural styles used in the project.
- Existing camp units lack defined parking pads and camping areas to reduce site impacts.
- Gravel road into campgrounds has potential to create dust problems for campers.

c. Design Intent. The design concept for this site includes construction of separate camping facilities on the northern peninsula as shown on Plate 6-08B, and expansion and improvement of the existing facility area as a separate day-use beach and picnic site. Future development calls for providing 30 additional camp units to improve operating efficiency and meet future recreation facility demand. The southern peninsula should be held in reserve as a potential future recreation development area.



Photograph 6-11

Existing camp units at Georges Cove Park lack defined parking and tent pad areas.



Photograph 6-12

Proposed new beach and day-use area at Georges Cove Park

7. HAND PARK

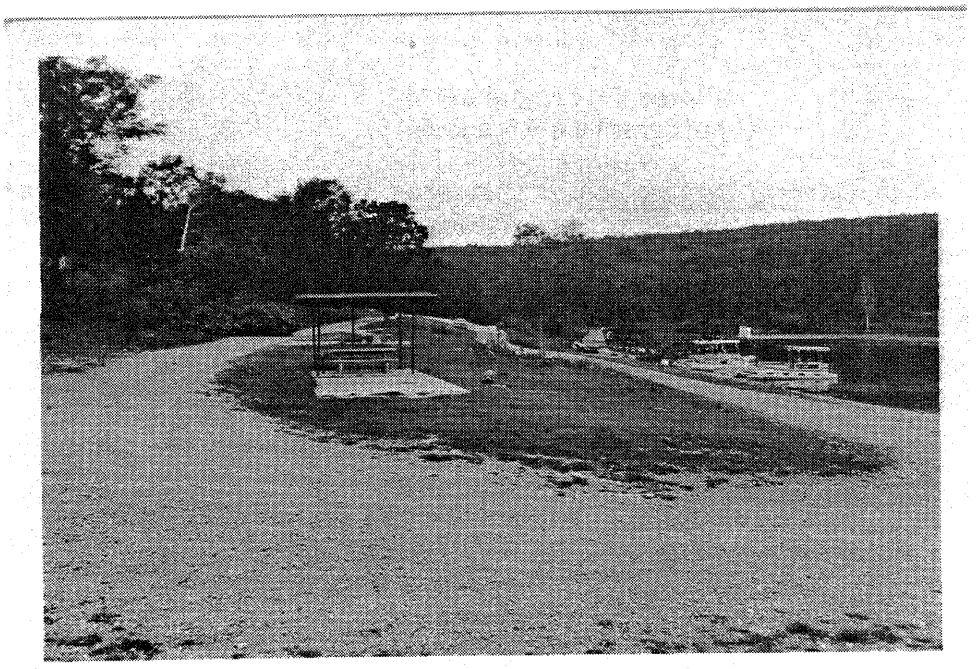
(Plates 6-10A and 6-10B)
(Photographs 6-13 and 6-14)

a. General Description. This is a minor park containing approximately 135 acres above the top of the flood control pool. Located on the north shore of Big Creek Arm, access to this park is provided by nine miles of paved road extending from U.S. Highway 62. The park is primarily used as a lake access point. Existing facilities include a one-lane launch ramp and a permit only group use camping area. Park boundaries, topography and soil characteristics severely restrict facility expansion.

b. Site Analysis

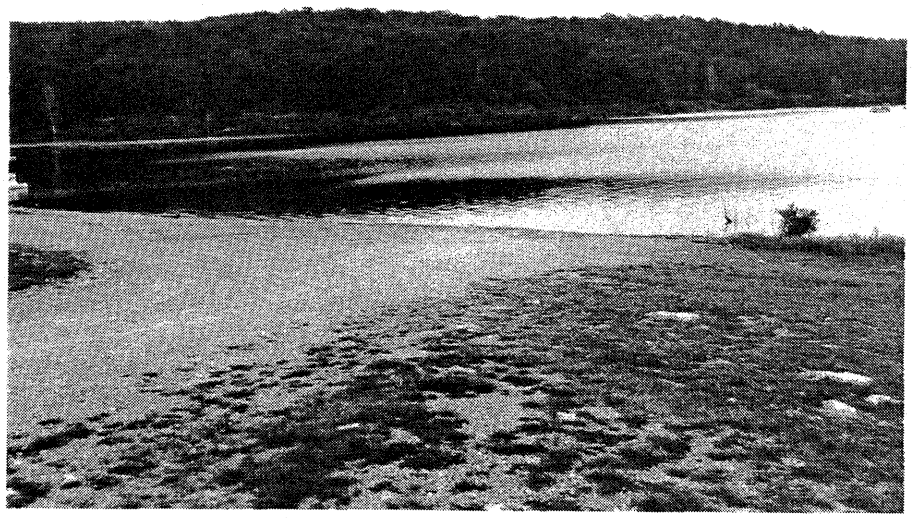
- Developed park area is relatively flat and subject to frequent flooding.
- Depth to bedrock places severe limitation on future development.
- Area is open and lacks major vegetative cover.
- Project boundaries and lack of access roads limit development potential.
- Launch area is shallow and inaccessible during lake levels above EL. 563.
- Pit toilet is frequently flooded.
- Abandoned picnic table remnants are in poor condition and are an operation maintenance problem.
- Parking facilities are inadequate for the boat launch area.

c. Design Intent. Use of this area should be restricted to a secondary boat access point. Existing picnic site remnants should be removed.



Photograph 6-13

Remnants of abandoned picnic units at Hand Park are in poor condition and should be removed.



Photograph 6-14

The boat launch area at Hand Park is limited by shallow water and is inaccessible at pool levels above elevation 563.

8. HENDERSON PARK

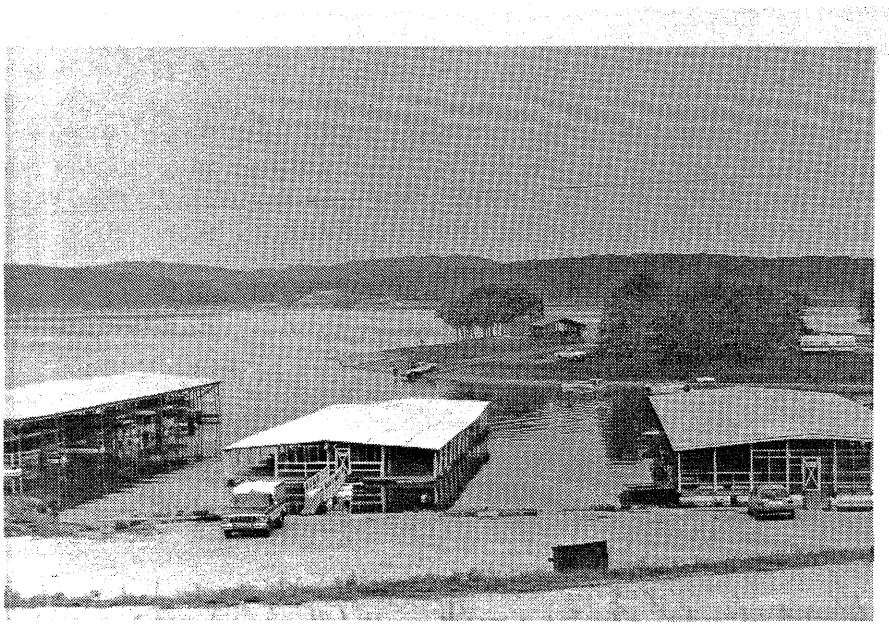
(Plates 6-11A and 6-11B)
(Photographs 6-15 and 6-16)

a. General Description. This area is located on the eastern shore of the lake directly adjacent to the eastern end of the Highway 62 bridge. The area contains 50 acres above the top of the flood control pool. Major facilities include a marina, picnic units, swimming beach, changing shelters and campground.

b. Site Analysis

- Slopes are steep along the shoreline, with flat to moderate slopes in the campgrounds.
- Soils in the area have severe limitations for future development in the undeveloped areas of the park.
- Developed areas of the park have minimum tree cover of mixed hardwoods.
- Severe erosion problems occur along the northeast shoreline.
- Camp units are heavily used and in good condition but lack adequate overflow parking for trailers.
- Restrooms are compatible with existing architectural styles at the project.
- Park frequently reaches capacity and is heavily used by campers and day users alike.
- Beach, picnic shelter, change house, and launch ramp are poorly located in terms of accessiblity and have major potential to cause conflicts with existing marina and camp units.
- Flood levels at or above EL. 565 inundate the access road and eliminate use of the entire campground area.
- Park area south of highway has potential for launch ramp and parking to eliminate conflicts in campgrounds.
- Facilities at the park are essentially duplicated by and in competition with nearby facilities at the Panther Bay, Robinson Point, and Bidwell Point Recreation Areas and the private camp facilities at Wilderness Point. Highway 62 Bridge makes other COE recreation areas immediately accessible from east side of lake.

c. Design Intent. The five-year development plan for this area has been designed to minimize significant use conflicts and the negative effects of moderate flooding events. The plan (as shown on Plate 6-11B) recommends construction of a new two-lane boat launch ramp on the east side of the peninsula, thereby eliminating boating traffic through the major camping area. After this improvement, the construction of a new day-use area at Panther Bay (see Plate 6-14B) would relieve pressure for day-use activities. The plan also recommends raising the park access road to EL. 565 to allow continued use during moderately high water conditions.



Photograph 6-15

Close proximity of marina (foreground) and Henderson Park boat launch, swimming beach and camping area (background) result in land and water congestion and potential safety problems.



Photograph 6-16

Typical camp units at Henderson Park

9. HOWARD COVE PARK

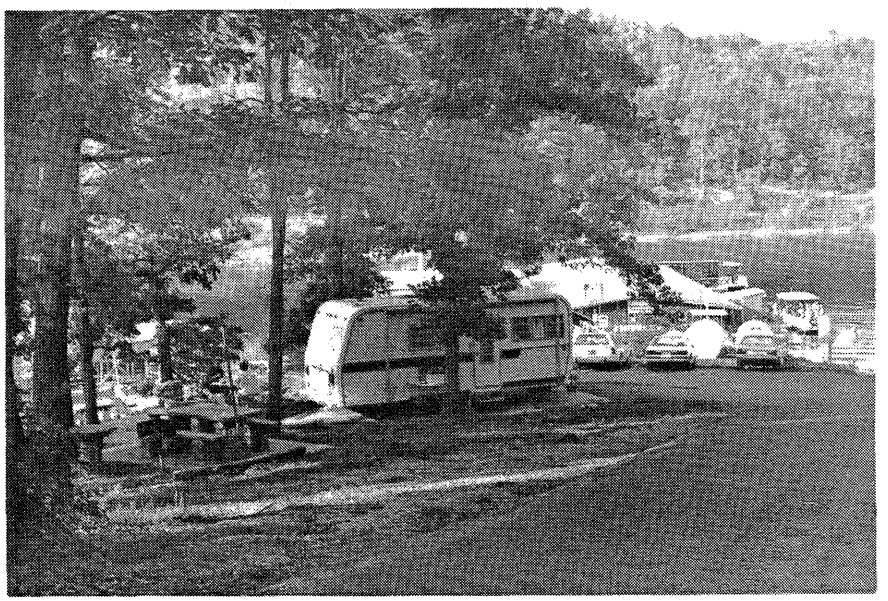
(Plates 6-12A and 6-12B)
(Photographs 6-17 and 6-18)

a. General Description. This area contains approximately 165 acres above the top of the flood control pool and is located approximately one-half mile off State Highway 101 on the Bennett's Bayou Arm of the lake. Available facilities include a commercial boat dock, launching ramp and camp sites. Bennett's Bayou is a well known spring fishing area, because game fish are attracted to the running water of this embayment during the spawning season.

b. Site Analysis

- Soils and slopes limit future expansion of camping facilities in developed area. Existing camping units are located in areas with severe soil constraints.
- The area is heavily wooded with upland hardwoods.
- Park consist of only 12 camp units that are in moderate to poor condition. Units are not easily accessible, with some located away from the water.
- Restroom facility is compatible with project architectural styles. Facility is located to serve marina and launch area more than camping units.
- Camp facilities are primarily used by marina visitors and do not produce revenues adequate to offset operational and maintenance costs.
- Marina could use additional boat launch lane, but there is inadequate space to expand parking.
- Ridgetop area is suitable for future development but demand does not warrant use of this area.

c. Design Intent. The marina owner should be provided with the option to include the operation of the 12 camp units as part of the marina lease agreement. If the marina operator is not interested in this option, the existing camp units should be relocated and the small camping area should be converted to native vegetation. The site would then be maintained for boat and marina access.



Photograph 6-17

Howard Cove Park provides 12 camp units. It is not cost effective for the Corps of Engineers to maintain this small camping area, but the facilities are well used by marina customers.



Photograph 6-18

The boat launch and marina area do not have adequate parking. Therefore, overflow parking at Howard Cove must be accommodated along this access road.

10. JORDAN PARK

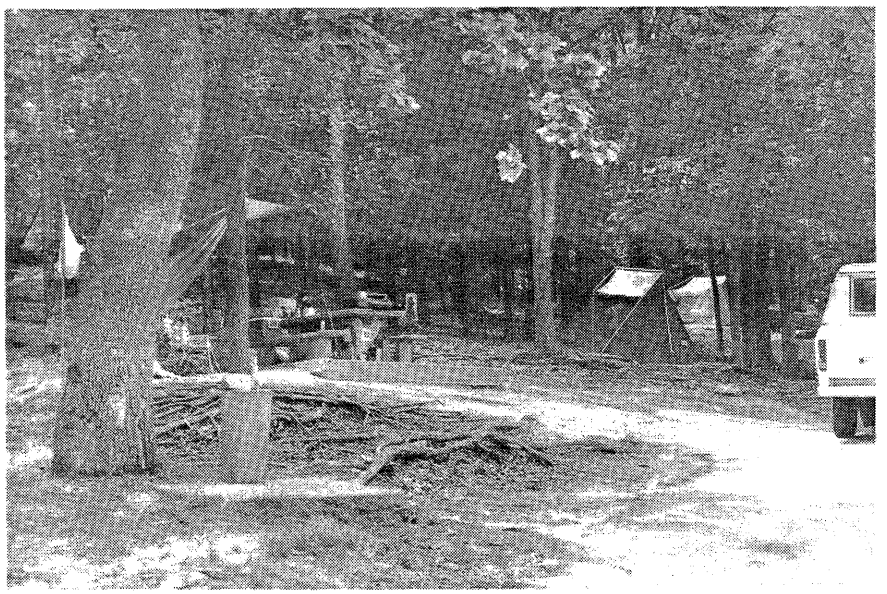
(Plates 6-13A and 6-13B)
(Photographs 6-19 and 6-20)

a. General Description. This area is located on the south shore of the Big Creek Arm of the lake about three miles (by water) northeast of the dam. The area contains approximately 315 acres above the top of the flood control pool. Access is provided by County Highway 64. Facilities include a marina, boat launch ramp, camping and picnic units and swimming beach. This area is very popular and used to capacity during the spring spawning run of game fish.

b. Site Analysis

- Soils and slopes limit future development on much of the peninsula. Park has shallow bedrock outcroppings and potential major erosion problems in the camping area.
- Camping area has moderate tree cover of hardwoods; the undeveloped area is heavily wooded.
- Road circulation is poorly defined, with no separation between day-use and camping traffic.
- Raised concrete camping pads are potentially dangerous and have inadequate impact areas, resulting in loss of turf cover and erosion problems. These areas are in need of major renovation.
- Beach area is in poor condition, and has no defined parking for day users.
- Camp units are heavily used and frequently reach capacity. Lack of separate day-use area cause camper/day-use conflicts and loss of fees.
- Park has potential of upgrading with addition of shower facilities.
- Current use of marina, boat launch and beach cause major parking problems during high use periods.

c. Design Intent. Recommendations for this area (as listed in Plate 6-13B) are designed to reduce conflicts by providing separate areas for campers, day users and marina activities. Specific five-year plan improvements include a new entrance station, improvements to the existing camp and circulation system, construction of additional camping and day-use facilities, and restoration of a number of existing camp units. Future plan improvements include development of a 12-unit group use camp area as shown on the development plan for this area.



Photograph 6-19

There are a number of camp units at Jordan Park that require major site restoration to avoid further severe site impacts, including erosion, soil compaction and loss of tree cover.



Photograph 6-20

Current use of marina, boat launch lanes and beach at Jordan Park results in severe parking problem.

11. NEWTON LANDING

(No plate provided)
(Photograph 6-21)

a. General Description. Newton Landing is an undeveloped 160-acre area located on the Float Creek Arm on the east side of Norfork Lake. Access to this remote area is limited to a steep gravel road that is in very poor condition. However, prior master plan reports included this site as a potential recreation area.

b. Site Analysis

- This site is characterized by poor soils, steep slopes, steep shoreline areas and severely limited potential for water access.

c. Design Intent. This site is not suitable for recreation development or lake access. Furthermore, the area is not required to meet current or future recreation facility needs. Therefore, this site should be abandoned as a recreation area, and the land should be converted to a more appropriate use classification, such as wildlife management or forest reserve.



Photograph 6-21

Current access to Newton Landing is limited to this steep gravel road which ends abruptly at the lakeshore.

12. PANTHER BAY PARK

(Plates 6-14A and 6-14B)
(Photographs 6-22 and 6-23)

a. General Description. This area is located on the west side of the lake adjacent to the newly constructed Highway 62 bridge. It is about nine miles from Mountain Home, Arkansas, and contains approximately 270 acres above the top of the flood control pool. Facilities include a commercial boat dock, boat launching ramps, swimming beach and campgrounds around a sheltered embayment. The park's central location, easy access, scenic views and numerous facilities make it a popular recreation destination on the lake.

b. Site Analysis

- Area slopes and soils are moderate to severe, limiting potential for major expansion of existing camping facilities.
- Existing camping facilities are in good repair with minor improvements needed at lakeside units. Majority of units are located away from the water. Use of this area is low to moderate.
- Marina and boat launch ramps have adequate parking facilities.
- Camp units above the marina are abandoned and in a deteriorated condition.
- Restrooms are adequately located to serve user needs and compatible with project architectural styles.
- There are four existing boat launch ramps in the park area. One of these has limited use due to its slope, but offers excellent potential to be converted to a new day-use area parking lot.
- Beach below campgrounds is shared by day users and campers, but is underutilized.

c. Design Intent. The five-year plan for this area includes the development of a major new day-use area adjacent to the northernmost existing boat launch ramp. This area would accommodate day-use recreationists from throughout the central lake area, thereby reducing or eliminating use conflicts at several major recreation areas. Other minor improvement recommendations are identified on Plate 6-14B.



Photograph 6-22

Panther Bay Park is centrally located and provides excellent boat launching facilities with adequate parking areas. (Note Henderson Park and Highway 62 bridge in background.)



Photograph 6-23

Proposed day-use beach area at Panther Bay Park

13. PIGEON CREEK PARK

(Plates 6-15 A and B; 6-16 A and B)
(Photographs 6-24 and 6-25)

a. General Description. This area is located on the north shore of the Pigeon Creek Arm of the lake adjacent to Arkansas State Highway 201. Located 24 miles upstream from the dam and about five miles north of Mountain Home, Arkansas, Pigeon Creek Park encompasses approximately 386 acres above the top of the flood control pool. Facilities available include a boat launching ramp and campground. On the west, the park borders shallow Pigeon Creek which flows into a very deep section of the lake, with steep bluffs on the eastern edge of the park.

b. Site Analysis

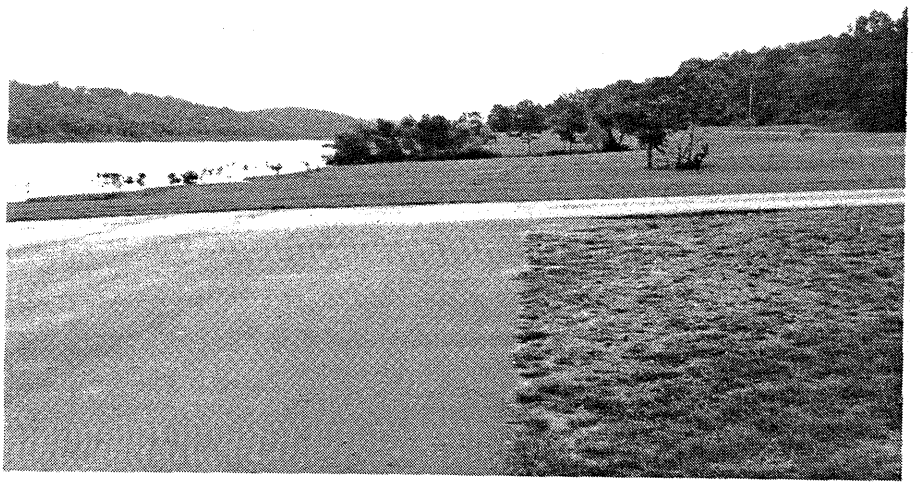
- Slopes in this recreation area are flat to moderate, with much of the area subject to flooding during high lake levels.
- Soils have slight to moderate limitations providing potential for future development above flood levels.
- Park supports unique cypress grove stand. This area is frequently used as an unauthorized camping area.
- A small camping area (four units and restroom facility) near the park entrance is difficult to maintain and is prone to vandalism and misuse.
- Park has two launch ramps, one of which is not suitable for use because of shallow slopes and impact of low water levels.
- Pit toilet above launch ramp is compatible with existing architectural styles but lacks adequate pedestrian access from the parking area.
- Park is not heavily used due to prior misuse and shallow water. This area has been successfully used for major boat races and is well suited for large group use activities.
- Park location (in relation to Cranfield and Mountain Home) and potential for day-use expansion can help reduce camper/day-use conflicts at Cranfield Park.
- Portions of the Pigeon Creek area receive heavy unauthorized use from local off-road vehicle enthusiasts. The area may be suitable for creation of a special ORV area as discussed in Section 6-09.

c. Design Intent. The concept for this area is designed to consolidate and strengthen day-use facilities to attract more visitation, and to relieve day-use pressures at other parks. Specific recommendations (as shown on Plate 6-15B) include elimination of the small camping area near the west entrance, creation of a day-use beach area at the launch lane that is not suitable for boat access, and a number of other improvements to attract visitors to this recreation area. (Plans for future development as an ORV use area are not included in this section of the plan, or on the site maps, since this development is subject to further study and evaluation as referenced in Section 6-09.)



Photograph 6-24

Unique cypress stand along shoreline
at Pigeon Creek



Photograph 6-25

Flat area at the end east of Pigeon Creek
is suitable for day-use activities.

14. QUARRY COVE DAM AREA

(Plates 6-17 A and B; and 6-18 A & B)
(Photographs 6-26 through 6-29)

a. General Description. This area is located at the dam site and contains approximately 900 acres of recreational land above the top of the conservation pool. A second area has been developed just below the dam (the tailwater area), adjacent to the power plant and just down the creek from the Norfork National Fish Hatchery. Access to Quarry Cove is provided by Arkansas Highway 5 from Mountain Home, and Highway 177 which crosses the dam and connects to the east side of the lake. The commercial boat dock is moored in the sheltered flooded quarry area, from which rock was obtained for the construction of the dam. The high ground (lakeside) picnic and camping units overlook the quarry, lake and dam. Additional facilities include boat launch lanes and a swimming beach.

b. Site Analysis

- The lakeside area has moderately sloping hillsides, with a relatively flat area on top that has potential for future expansion of camping facilities.
- The tailwater area is relatively flat and open.
- Soils and shallow bedrock on the lakeside impose moderate to severe limitations on development.
- The boat launch ramp is heavily used yet provides adequate ramp space and parking areas for boaters.
- Existing camp units above the beach are in need of upgrading. Due to continuous use, severe soil compaction and erosion have occurred in this area.
- The camping area on the knoll is used by marina visitors and has limited potential for expansion. Existing camping units are in need of hardened parking pads and impact areas.
- Pit toilets vary in construction material but are compatible with architectural treatment used throughout the project.
- Camping facility expansion on the tailwater side is limited by high voltage power lines that cross the area. Use of tailwater side is popular with campers and day-use fishermen. This area reaches capacity frequently and lacks separate use areas and parking.
- Camp units are visible and lack visual separation from the adjacent highway.

- o New camp units provide model example for campground design in terms of parking pads and impact areas.

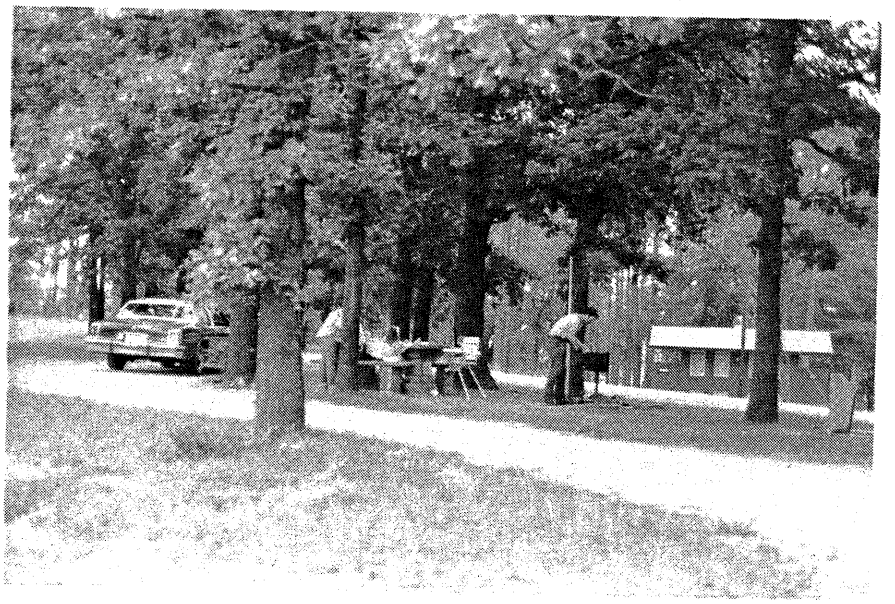
- o Architectural treatment of restroom and shower at tailwater camping is not consistent with other styles in the project.

c. Design Intent. The design concept for the lakeside area includes upgrading of the beach area and conversion of this beach area to day use only. Camping on the lakeside area would then be limited to the hilltop site west of Highway 177. Some improvements to the marina area are also proposed as illustrated on Plate 6-17B. The campground in the tailwater area should be expanded to its full capacity to maximize operating efficiency. A day-use fishing access point has also been designated to accommodate day-use visitors during peak use periods, as shown on Plate 6-18B.



Photograph 6-26

Beach area on lake side of the Quarry Cove Dam Area should be improved and expanded as a day-use area.



Photograph 6-27

Typical camp unit on ridgetop site above the dam at Quarry Cove Dam Area.



Photograph 6-28

New pedestrian bridge provides improved access to Norfork Lake tailwater at the Quarry Cove Dam Area.



Photograph 6-29

New camp units below the dam at Quarry Cove Dam Area provide excellent parking and tent pads to reduce site impacts.

15. RED BANK PARK

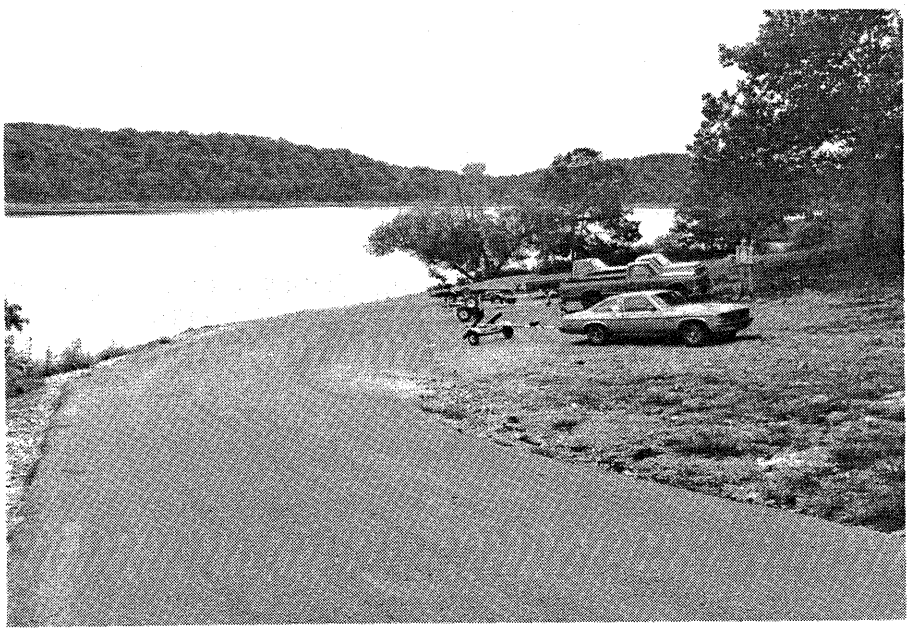
(Plates 6-19A and 6-19B)
(Photographs 6-30 and 6-31)

a. General Description. This park provides about 200 acres above the top of the flood control pool. Access is provided by 1.5 miles of good gravel road extending from Arkansas State Highway 101. This area is on the east side of the lake about five miles south, by water, of the Missouri-Arkansas state line. Available facilities include campgrounds and a boat launch ramp. The remains of a stone and mortar house and a spring which flows into three overflow pools are located adjacent to the boundaries of this recreation area.

b. Site Analysis

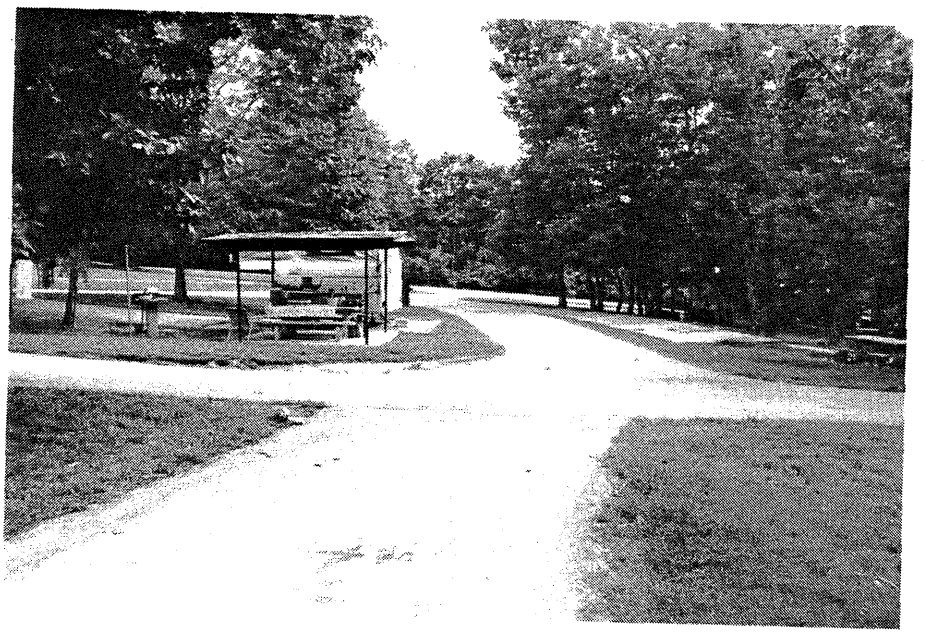
- Soil and slopes have moderate to severe restrictions on future expansion.
- Developed area is open with scattered hardwood tree cover.
- Launch ramp parking is not sufficient in size to handle current use levels.
- Park provides the only lake access point between Udall and Cranfield Parks.
- Existing sites are in good to moderate condition and they are heavily used by fishermen during spring spawning runs. Future expansion of existing camping area is limited by park boundaries and adjacent private properties.
- A county road extends through the park limiting control or closure of facilities during the off seasons.

c. Design Intent. The launch area should be improved by installing a high water parking area to improve operating efficiency. Recommendations are to upgrade and expand existing recreational facilities. Specific recommendations, as shown on Plate 6-19B, call for an additional 18 camp units and improved launch and parking facilities.



Photograph 6-30

The parking area at the Red Bank Park boat launching ramp is not adequate to meet area demands.



Photograph 6-31

Red Bank Park provides 12 camp units. These remote sites are expensive to maintain and operate and they are under-utilized during most of the peak recreation season.

16. ROBINSON POINT

(Plates 6-20A and 6-20B)
(Photographs 6-32 and 6-33)

a. General Description. This park is located on the west side of the lake and access is provided by 2.5 miles of paved road extending from U.S. Highway 62. Located just over eight miles from Mountain Home, Arkansas, the park contains approximately 575 acres of land above the flood control pool. Facilities include a boat launch ramp, camping sites, beach, picnic shelters and a hiking trail. The Robinson Point Trail provides access to impressive scenic views from a bluff along the shore.

b. Site Analysis

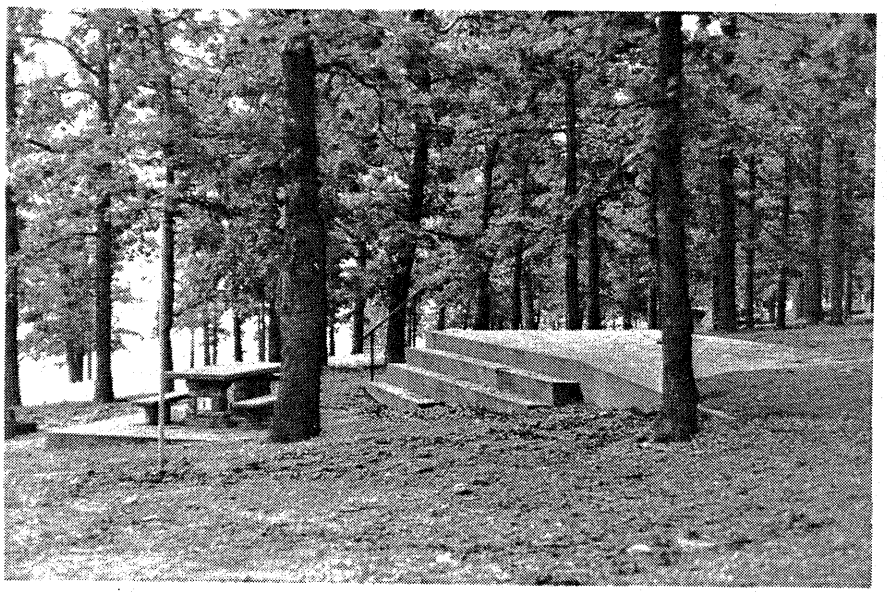
- Soils and slopes have moderate impact on future development. Several areas have potential for facility expansion.
- The peninsula camping areas lack adequate tree cover due to periodic flooding. Mixed hardwoods cover much of the remaining park.
- The main camping area is heavily congested with camp units located close together and poorly aligned roads.
- Many of the camp units consist of raised concrete pads that are difficult to back into and potentially dangerous to campers.
- Lack of hardened impact area around camp units has caused soil compaction and erosion problems. Camp units are located in areas of moderate to severe soil constraints.
- There is insufficient overflow parking for extra cars and boat trailers.
- A considerable portion of existing facilities, camp units and launch ramps are subject to periodic flooding.
- Park facilities are heavily used by campers and day users, causing significant site impacts, conflicts, and loss of fees.
- Architectural treatment of toilet facilities vary in style and material but are consistent with existing project facilities.
- Entrance station is visually attractive and a model example for all project entrance stations.

c. Design Intent. Recommendations for Robinson Point have been designed to maximize operating revenues at this major park area and reduce day-use/camping conflicts. The plan calls for restoration of most of the existing camp units, elimination of some units to reduce site congestion and improve circulation, development of new camp units, and related improvements, as illustrated and described on Plate 6-20B.



Photograph 6-32

This camping area at Robinson Point is located on a peninsula and is very popular. However, it is subject to regular flooding which reduces the opportunity to establish native landscape cover.



Photograph 6-33

Elevated camp pads at Robinson Park are undesirable and should be eliminated where possible in association with proposed circulation road improvements.

17. TALBERT PARK

(Plates 6-21A and 6-21B)
(Photograph 6-34)

a. General Description. This small area contains four acres above the top of the flood control pool. The park is located on the east side of Bennett's Bayou Arm, about three miles upstream from its confluence with the main body of the lake. Access to the lake is provided by a paved road extending 1.5 miles from U.S. Highway 62. Talbert Park is used solely as a lake access point with a launch ramp, private slips and parking for cars with trailers.

b. Site Analysis

- Existing access road is steep and extends directly into the lake, creating a potential safety hazard, especially when foggy or at night.
- Park size and boundaries severely limit facility expansion.
- The existing parking area is cut into a rock bank, and expansion would be very costly.

c. Design Intent. This area should be maintained as a boat access point. Recommended improvements include installation of a barrier guard to redirect traffic, and improvements to the parking area and launch ramp as indicated on Plate 6-21B.



Photograph 6-34

The access road at Talbert Park leads directly into the lake and the parking area is poorly defined.

18. TECUMSEH PARK

(Plates 6-22A and 6-22B)
(Photographs 6-35 and 6-36)

a. General Description. This park, containing a total of 420 acres, is located near the upper limits of the lake and includes land on both sides of the lake. Direct access is provided by U.S. Highway 160 which crosses the lake as it passes through the park area. In this vicinity, the lake is generally confined within the banks of the natural stream. Available facilities include camping and a primitive boat launch ramp.

b. Site Analysis

- Park is relatively flat and subject to frequent flooding.
- Area north of the bridge is generally open with scattered tree cover. A stand of pine trees is located south of the existing bridge.
- Existing facilities in the northwest sector of the park are limited, in poor condition, and prone to severe flood damage. The area is currently used for both day use and camping, but use areas are poorly defined.
- An abandoned road serves as a launch ramp but is in poor condition and the ramp lacks adequate parking facilities.
- This site is very popular as a canoe access point.
- The pit toilets are in relatively good condition and are compatible with the dominant architectural styles at the project.
- Road leading to private residences exists in park at north end.

c. Design Intent. Although this site is marginal in terms of ultimate development size, it provides a unique riverlike recreation experience. It is the only park that serves the extreme northern section of the lake, and the area is readily accessible by a major highway. Therefore, the recommended plan calls for improvements to the small day-use/camping area to the north of Highway 160, and a camping area and improved boat launch ramp to the south of the highway.



Photograph 6-35

Proposed camping area at Tecumseh Park
on south side of Highway 160



Photograph 6-36

Tecumseh Park offers a unique, high quality
"river-like" recreation setting.

19. TRACY PARK

(Plates 6-23A and 6-23B)
(Photographs 6-37 and 6-38)

a. General Description. This park is located about seven miles upstream from the dam on the western shore. Access to this park is by Tracy Ferry Road from Mountain Home, Arkansas, or from State Highway 5. The area contains approximately 210 acres above the top of the flood control pool. Factors contributing to this park's popularity are the sheltered location of the cove, its close proximity to several population centers, and its location near a number of interesting parts of the lake. Available facilities include camping, a launch lane and a marina.

b. Site Analysis

- Soils and slopes severely restrict the potential for facility expansion adjacent to the water. A developable area near the park entrance would be suitable for camping.
- The park is heavily wooded with hardwood trees and scattered eastern red cedars.
- Existing camping facilities are in moderate condition but are infrequently used and are low income generators.
- The boat launch ramp is inundated with low level flooding. Parking is insufficient to meet existing demand. However, expansion potential is restricted by steep topography and the shallow depth of bedrock.
- Present road alignment directs boat launching traffic through the marina, which results in conflicts and congestion.

c. Design Intent. The camp units at this site should be relocated to Georges Cove, and campers should be redirected to that site. Tracy Park would then be limited to boat launching and marina use, with related improvements as identified on Plate 6-23B.



Photograph 6-37

This parking area at Tracy Park does not meet the needs of the boat launch and marina facilities.



Photograph 6-38

The alignment of the boat launch ramp and approach road result in traffic congestion at Tracy Park. However, site improvements are severely restricted by steep terrain.

20. UDALL PARK

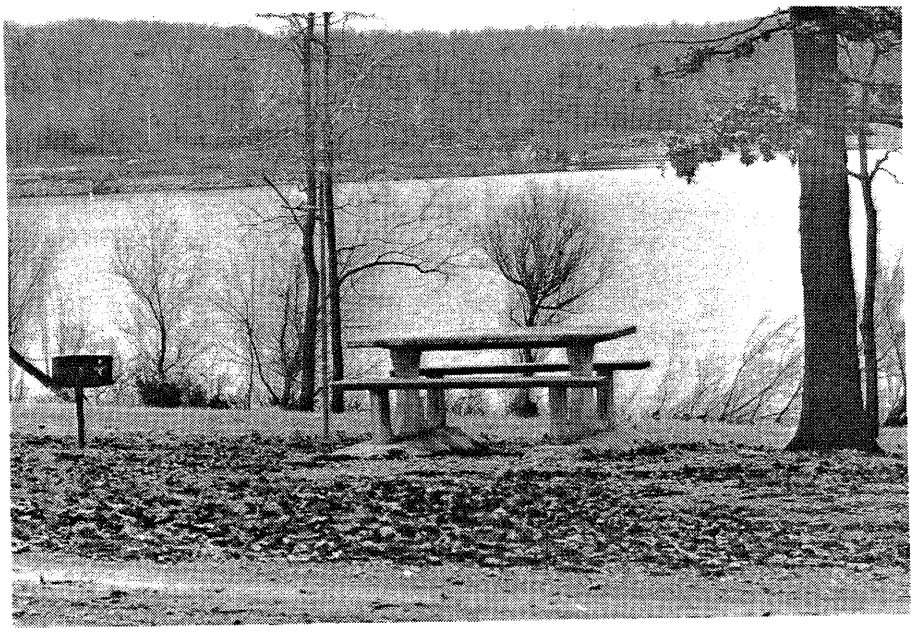
(Plates 6-24A and 6-24B)
(Photographs 6-39 and 6-40)

a. General Description. This area is located about 1.5 miles west of the town of Udall, Missouri, with access by State Highway O. Udall Park contains approximately 140 acres above the top of the flood control pool on the eastern shore of the lake about 35 miles, by water, upstream from the dam. Lake access enables fishing of the upstream waters of Lick Creek or Bridges Creek area, and existing facilities are well used. A commercial boat dock is located in this area, and the concessionaire operates a cafe and tourist cabins on adjacent private lands.

b. Site Analysis

- Park configuration and boundaries limit major park expansion, but some expansion is feasible.
- Existing camp/picnic facilities are located above EL. 563 and are in good condition.
- Bluffs opposite this site are winter habitat and a possible nesting area for bald eagles.
- Facilities cannot be closed during low use periods since the county access road extends through the camping area.

c. Design Intent. This site should be maintained as a camping area and lake access point. Recommendations include increasing the number of camp units, installation of an honor box fee collection system, and related area improvements as prescribed on Plate 6-24B.



Photograph 6-39

Existing camp unit at Udall Park is ideally located above the flood pool, but lacks adequate parking and tent pad areas.



Photograph 6-40

Proposed camping expansion area at Udall Park

21. WOODS POINT PARK
(Plates 6-25A and 6-25B)
(Photographs 6-41 and 6-42)

a. General Description. Situated on the north side of the Big Creek Arm, this area contains approximately 195 acres of gently sloping land above the top of the flood control pool. Access to the area is provided by two miles of gravel road extending from Hand Road. Much of the area is undeveloped, and the area that is developed affords a very scenic view of the lake. Major facilities include campgrounds and a boat launch ramp. This area is heavily used during the spring and fall fishing seasons.

b. Site Analysis

- The site has gently sloping, heavily wooded land with limited developmental constraints.
- The existing launch ramp is poorly designed, insufficient in size for demand, and difficult to launch from during low water conditions.
- Camp sites are located adjacent to the parking area and are in generally poor condition.
- Park offers potential for expanding facilities to include more camping, day-use area and beach.

c. Design Intent. Recommendations at this site include improved and expanded camping facilities, construction of a new boat launch lane, provision of a day-use beach area, and use of an honor fee collection system as prescribed on Plate 6-26B.



Photograph 6-41

Existing boat launch ramp and parking area
at Woods Point Park



Photograph 6-42

Existing camp units at Woods Point Park
are in poor condition.

6-05 FUTURE RECREATION AREAS

A. General. Four sites have been identified in past Norfork Lake Master Plan Updates as potential future park sites. (See Plate 6-01.) Visitation projections, as well as facility need analysis, have shown that future recreation needs through the year 2000 can be met through the rehabilitation and expansion of existing sites. Therefore, these four sites should continue to be held in reserve as potential recreation areas until their development is warranted by increased facility demand.

A brief description of each of these potential future park areas is as follows:

1. Ford Cove. This area is on the west side of the lake on the Missouri-Arkansas border. This area contains approximately 540 acres above the top of the flood control pool. Access is provided by Highway T off Highway 201. Between the north and south coves, there are numerous small indentions along the shoreline that would be suitable for camping development. The northern end of the park has a flat area that is also conducive for waterfront campsites. Until such time as the park is needed for campground development, the area is available for agricultural and grazing leases. Some parts of the area are managed for wildlife food and cover plots.

2. Big Creek. About 175 acres of land are contained above the top of the flood control pool. The area is located on the eastern shore of the lake, five miles upstream from the dam. Access is provided by eight miles of paved road and two miles of gravel road off U.S. Highway 62. The abundance of conifer and deciduous tree cover and the topography makes this area suitable for most forms of outdoor recreation. The park will one day be used for camping and day use. Much of the lake has relatively narrow arms and fingers, and the large open expanse of water in this area has a special attraction for water skiers. This area is not in the agricultural or grazing lease program and will be managed for natural/wildlife purposes until it is needed for park development.

3. Lick Creek. This area, containing approximately 140 acres, is located on the west side of the lake opposite Udall Park. Access is provided by a gravel and unimproved road off Missouri State Highway "J." Tree cover is moderate to heavy and the terrain is satisfactory for most types of outdoor recreation. The north side is relatively flat and will provide a good camping area for the camper desiring a river-type experience. Some of the area is included in wildlife food and cover plots. There are also grazing and agricultural leases on some of the area as interim uses.

4. Seward Point. This large area (approximately 1,000 acres above the top of the flood control pool) is located opposite the Arkansas Game and Fish Wildlife Refuge. Access is provided by an unimproved road off Arkansas State Highway 101. The land slopes from gentle to steep with the north end being particularly desirable for

camping and day use development. In that area, the land slopes gently to the water's edge. The area is included in the agricultural and grazing lease program, although at this time there are no leases for those purposes. In the absence of leases, the land will be managed as a natural/wildlife area.

6-06 INTERSITE TRAIL DEVELOPMENT

A. General. Existing trail facilities at Norfork Lake are currently limited to a three-mile trail system at the Robinson Point Recreation Area. There is a need for additional trail opportunities throughout the project. It is anticipated that current and future trail needs will be met by the continued construction of the Ozark Highlands Trail as discussed below.

B. Ozark Highlands Trail. The Ozark Highland Trail is a multi-state system that begins just south of Fayetteville, Arkansas and winds its way northeast for 250 miles to the Missouri-Arkansas border at Norfork Lake. At the border, the trail links up with the Ozark Trail which runs along the Missouri portion of Norfork Lake and continues northeast for 250 miles to St. Louis, Missouri. Much of the trail in southern Missouri and northern Arkansas follows the historic Trail of Tears, which the Cherokee Indians took in the 1830s on their forced march from the Carolinas and eastern Tennessee to western Arkansas and Oklahoma.

Presently, only 130 miles of the Ozark Highland Trail have been completed, primarily in the Ozark National Forest. Sixty-two miles are planned for construction within the Norfork Lake project boundaries. (See Plate 6-02). Completion of the Ozark Highland Trail through Norfork Lake will interconnect 12 public recreation areas, creating an excellent recreational trail system.

6-07 GENERAL DEVELOPMENT PRIORITIES

Given the uncertainty of funding and potential for changes in public recreation area needs, it is difficult to establish detailed or specific development priorities. However, the following priority distinctions have been included to provide general implementation guidance.

A. Priority A. Priority A items are generally limited to the restoration of existing facilities. It is logical that facilities which are presently used and in need of repair should be restored before further deterioration occurs and more costly repairs are required.

B. Priority B. Priority B items include the addition of new facilities for which there is a high demand (as determined in Chapter 4), and implementing management goals such as consolidation of marginal public use areas and expansion of selected areas to improve operating efficiency. Priority B status also applies to those items required to reduce conflicts between day and overnight use, and between boating, swimming and marinas.

C. Priority C. Priority C items include all facilities recommended as part of the Future Development Plan (1992-2000). These improvements generally include limited expansion of facilities at existing recreation areas as required to meet needs beyond the year 1991.

6-08 RELOCATION OF EXISTING FACILITIES

One of the objectives of this Master Plan is to propose future development plans that will provide for more efficient management and operation through the consolidation of certain existing areas, and the separation of day-use and overnight facilities. In order to accomplish these objectives, a number of site relocations have been proposed. Site specific recommendations were presented in Section 6-04. In addition, Table 6-01 is provided to summarize all of the site relocations and other facility adjustments.

6-09 OFF-ROAD VEHICLE USAGE

Norfork Lake project lands have been subjected to increasing levels of off-road vehicle (ORV) traffic over the last few years. Use levels have been particularly heavy at three areas, including the floodplain lands at upper Float Creek, upper Goodall Hollow and upper Pigeon Creek. This use is very difficult to control, and is causing widespread environmental damage, increasing operation and maintenance costs, and conflicts with other user groups on project lands.

While control of this type of use is a management problem, an alternative to the traditional increase in patrol efforts by the ranger staff to reduce the level of unauthorized use would be the creation of a designated ORV use area. This would concentrate ORV use in an area where successful control could be obtained.

A review of current and historical ORV use on the project indicates that a suitable location for this type of use would be in the Pigeon Creek area upstream of Pigeon Creek Park. Preliminary evaluations indicate that the soil conditions and terrain in this area may be suitable for creation of an ORV use area. It is the area nearest the population center for the county and has the highest use rate of the three areas. This land is currently part of an agricultural lease (Lease Plot NF-15). Since this area is within the limits of the flood pool, vegetative cover is sparse to heavy, with grasses and annuals dominant.

Creation of a designated use area would allow park rangers to direct ORV enthusiasts to a controlled site, concentrate environmental impacts in an area that can be maintained, and reduce the amount of land area impacted by ORV use. The trash generated by these users could be limited to a relatively small area and regular removal service could be provided at a cost savings over the current practice of as-needed removal over a much larger area. Concentrating the use in an area away from the camper, picnicker, and other more traditional project users would reduce conflict and provide a more satisfying recreation experience for all persons concerned.

It is recommended that this management problem should be evaluated in more detail as part of the Operational Management Plan. Implementation of a designated ORV use area would require the preparation of appropriate environmental documents to identify anticipated impacts and appropriate mitigative measures.

6-10 ARCHITECTURAL GUIDELINES

The existing building structures at Norfork Lake include restroom facilities, change houses, picnic shelters, and entrance stations. While constructed over the life of the project, many of the structures are visually compatible through the use of related architectural elements. The most frequently encountered structures are the restroom and change house facilities. While some of these structures are in good condition and differ greatly in age, many of the buildings from park to park are related architecturally with the use of compatible building materials, massing and color. Typical good examples of these facilities have a stone veneer or rusticated concrete masonry unit facade in light earthtone colors. Roof shapes vary from flat to simple roof pitches. Other facilities are unrelated, with the use of smooth concrete block, frame construction with textured plywood siding which has been painted dark brown, or corrugated metal.

To provide a unified architectural character throughout the project, a common design vocabulary should be used. Whenever possible, the architectural style and building materials should be as consistent as possible to provide visual continuity throughout the project. General architectural guidelines include:

- Facilities should be designed for minimum maintenance and operational expenses. Facilities should typically be constructed of materials that are compatible with the rural environment of the area. Suitable materials include stone, rusticated concrete block, and wood. Concrete block restrooms that are not flood prone, such as the one at Quarry Cove lakeside camp area, should be resided in wood to make them compatible with the new facilities below the dam.

- Facilities should be light to medium earthtone colors, which relate to the environment, are less obtrusive and more pleasing than darker, oppressive colors. Stains are preferable for maintenance reasons.

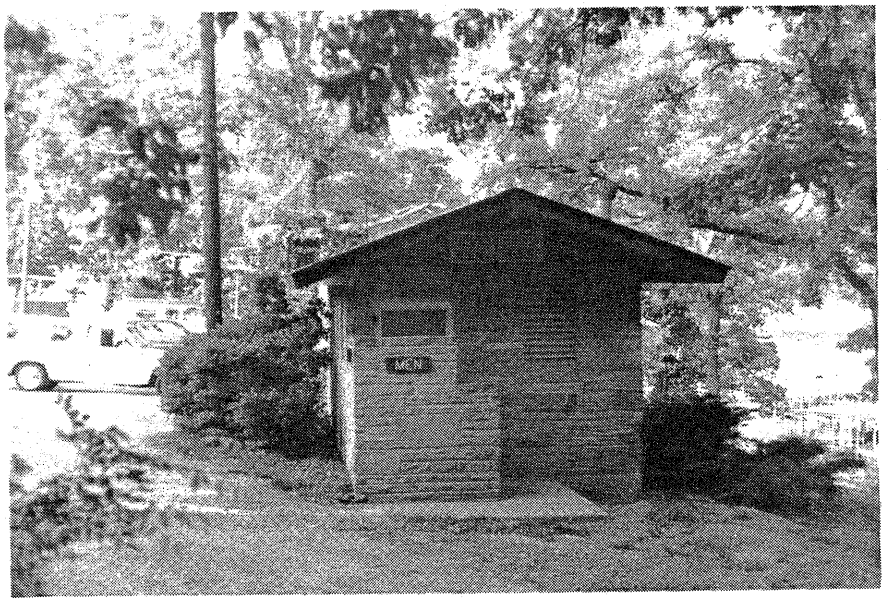
- Stone and rusticated concrete masonry units should not be painted.

- Roof shapes should be pitched and provide adequate overhangs to protect facility users from inclement weather.

- Whenever possible, building louvers for ventilation should be located on the back side of the building.

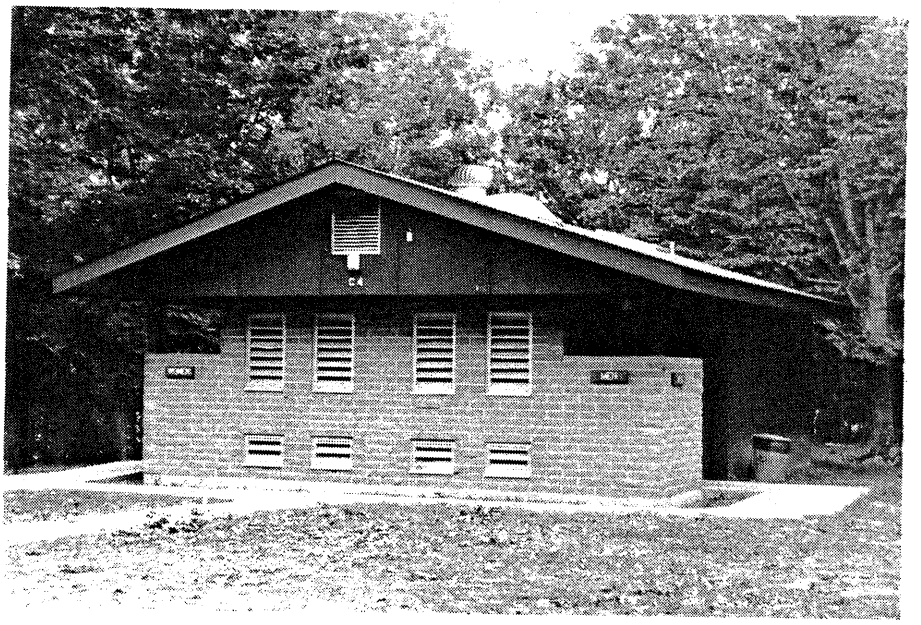
- Hardsurfaced paving should be used to allow adequate access to the building, especially at entrance areas, to reduce site impacts. All facilities should be handicapped accessible.

- Native landscape plantings should be utilized around the buildings to help buffer, maintain privacy, and integrate buildings into the surroundings.



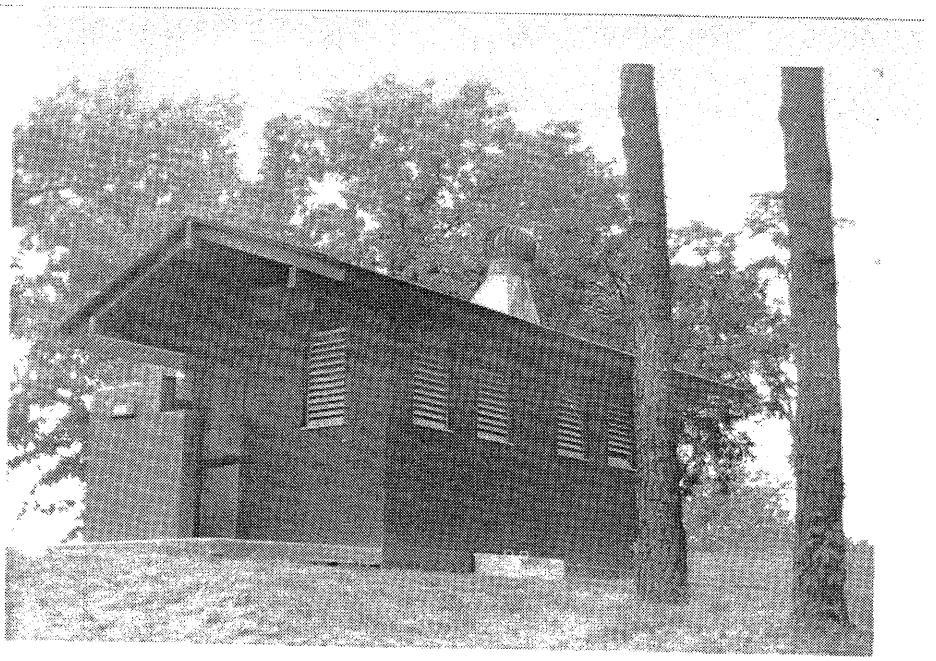
Photograph 6-43

Older restrooms at Norfork Lake used stone facades which blend well with the natural environment. Flat roofs were originally used.



Photograph 6-44

Louvers should be located away from pedestrian view when possible. Landscape plantings could help reduce the impact of this building.



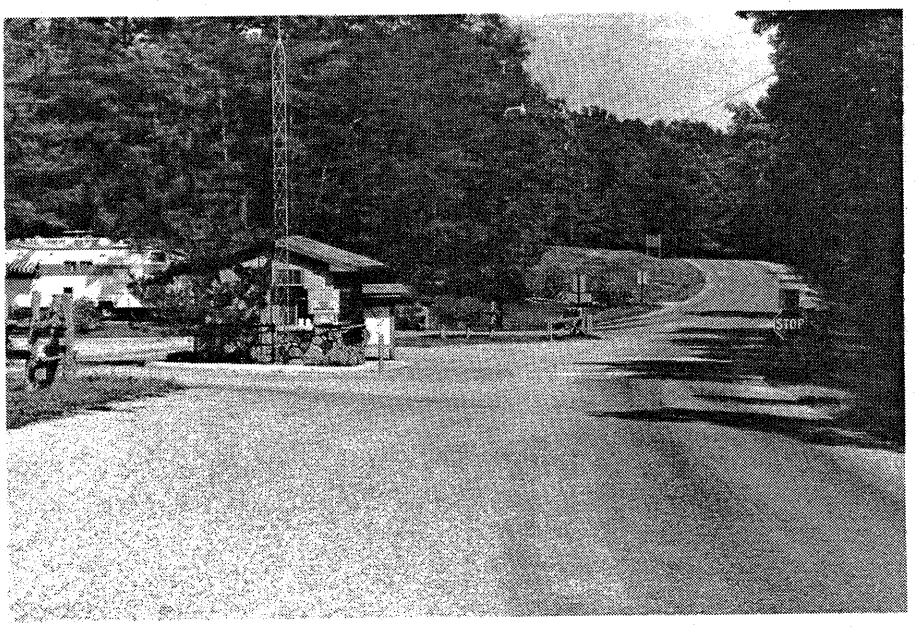
Photograph 6-45

Landscape plantings and residing or repainting the CMU a lighter earthtone color would greatly enhance the appearance of this restroom at Quarry Cove Dam Area.



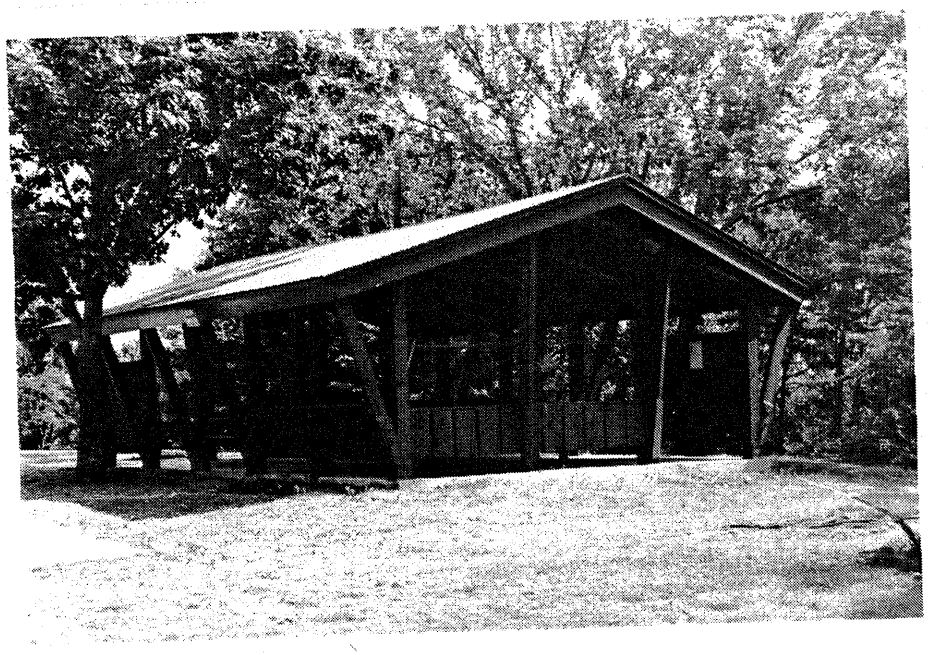
Photograph 6-46

The new restroom at Quarry Cove Dam Area should be painted a lighter earthtone color to make it visually compatible with the older stone restrooms.



Photograph 6-47

Wood siding and stone, used to provide an attractive entrance station at Robinson Point, have minimum maintenance cost.



Photograph 6-48

This picnic shelter at Quarry Cove Recreation Area is well designed and should serve as a model for the project.

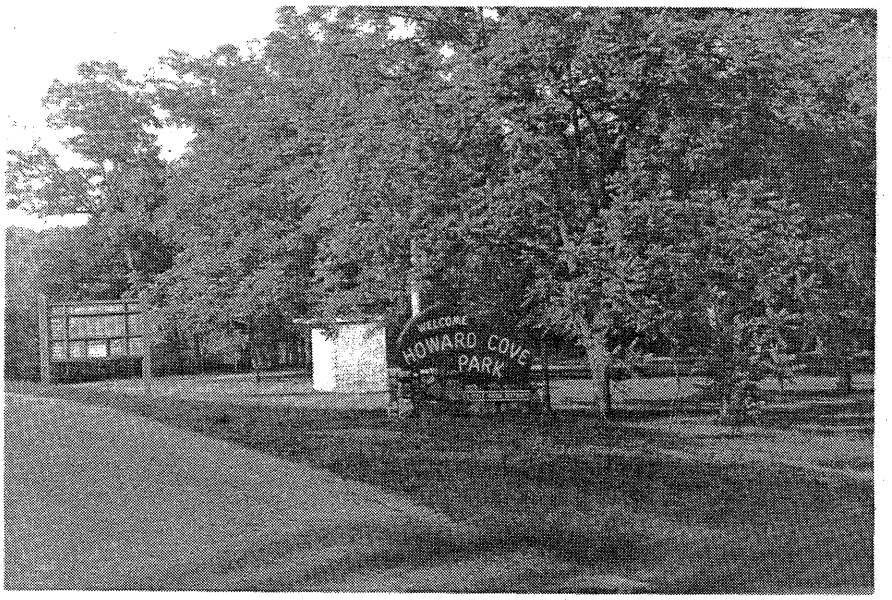
6-11 PROJECT SIGNS

A well planned sign system is a necessary component in providing direction and information to visitors and is often the first and last impression a visitor has of the project. In most instances thoughout the Norfork Lake project, a standard system of signing is used to identify and direct visitors to each park. Brown and white directional signs are used to provide direction to parks that are located away from the main highway system. Park entrances are clearly identified by a standard brown aluminum sign with white lettering on a rock base. Standard information signs with COE rules, regulations, and camping fees are easily seen as visitors enter the parks.

A standardized sign system to identify and direct visitors to the various recreation facilities within each park should be developed, along with a sign system to warn of hazards, establish restrictions, and provide information. To accomplish this, a number of considerations must be taken into account when choosing, installing and evaluating signs.

- Are the signs visible, legible, but not obtrusive?
- Are there enough signs or too many?
- Have the signs been designed along with other features of the project, or as an afterthought?
- Should the format of signs be different from project to project, or should one style of sign be adopted for the whole district?
- Should the signs declare a positive or negative command?

Signage, in general, should conform to the sign guidelines contained in EP310-1-6, Corps of Engineers Sign Standards and EC1130-2-200, Corps of Engineers Graphic Standards Manuals.



Photograph 6-49

A standard park entrance and information sign are located at each park entrance.



Photograph 6-50

A standard bulletin board type sign at each beach area could be used to help reduce the use of many signs.

Table 6-01

SUMMARY OF EXISTING AND PROPOSED RECREATION FACILITIES
AT EXISTING PUBLIC RECREATION AREAS

Norfork Lake

		Bidwell	Buzzard Roost	Cranfield	Curley Point	Gamaliel	Georges Cove	Hand	Henderson	Howard Cove	Jordan	Panther Bay	Pigeon Creek	Quarry Cove and Dam	Red Bank	Robinson Point	Talbert	Tecumseh	Tracy	Udall	Woods Point	Totals
Camp Units	Existing camp units	48	-	74	-	28	12	-	38	12	38	28	5	80	12	98	-	7	7	7	11	505
	Units to be relocated, 5-Yr	-	-	9A	-	12C	7C	-	-	12B	5A,7C	7B	5A	10A	-	19A	-	3A	7B	-	11A	*
	Units to be restored	11	-	45	-	28	10	-	-	-	17	7	-	18	-	79	-	-	-	7	-	222
	Units to be converted to day use	-	-	-	-	-	-	-	-	-	-	-	5	7	-	-	-	-	-	-	-	12
	New camp units, 5-Yr/Future	5/-	-	2/15	-	24/-	13/30	-	-	-	7/12	-	-	-	18/-	17/-	-	12/-	-	13/-	19/19	130/76
	Total camp units, 5-Yr/Future	53/53	-	76/91	-	64/64	32/62	-	38/38	-	52/64	21/21	-	73/73	30/30	115/115	-	19/19	-	20/20	30/49	623/699
Day Use Units	Existing day-use units, tables	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	3
	Existing picnic shelters, no./units	1/6	-	2/10	-	1/4	-	-	1/6	-	1/6	-	-	2/16	-	1/6	-	-	-	-	-	9/54
	New day-use units,tables,5-Yr/Future	-	-	6/-	-	5/-	3/-	-	-	-	5/-	8/-	4/-	5/-	-	-	-	3/5	-	-	4/-	43/48
	New picnic shelters, no./units	-	-	1/6	-	-	1/6	-	-	-	-	3/18	1/6	-	-	-	-	-	-	-	1/6	7/42
	Total units, 5-Yr/Future	6/6	-	18/18	-	9/9	9/9	-	6/6	-	5/5	26/26	15/15	24/24	-	6/6	-	3/8	-	-	10/10	137/142
Launch Ramps	Existing launch lanes	2	1	5	-	1	1	1	2	1	2	7	1	5	3	2	1	1	1	2	1	40
	Launch lanes to be restored	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	1	-	-	-	4
	Launch lanes to be abandoned	-	-	-	-	-	1	-	2	-	-	1	-	-	-	-	-	-	-	-	1	5
	New launch lanes, 5-Yr/Future	-	1/-	-	1/-	1/-	2/-	-	2/-	-	-	-	-	-	-	1/-	-	-	-	-	2/-	10
	Total launch lanes, 5-Yr/Future	2/2	2/2	5/5	1/1	2/2	2/2	1/1	2/2	1/1	2/2	6/6	1/1	5/5	3/3	3/3	1/1	1/1	1/1	2/2	2/2	45/45

*A - Units to be relocated within park - 51
B - Units to be relocated to another park - 26
C - Units to be relocated from another park - 26

REPRODUCED AT GOVERNMENT EXPENSE

NORFORK LAKE
MASTER PLAN PLATES

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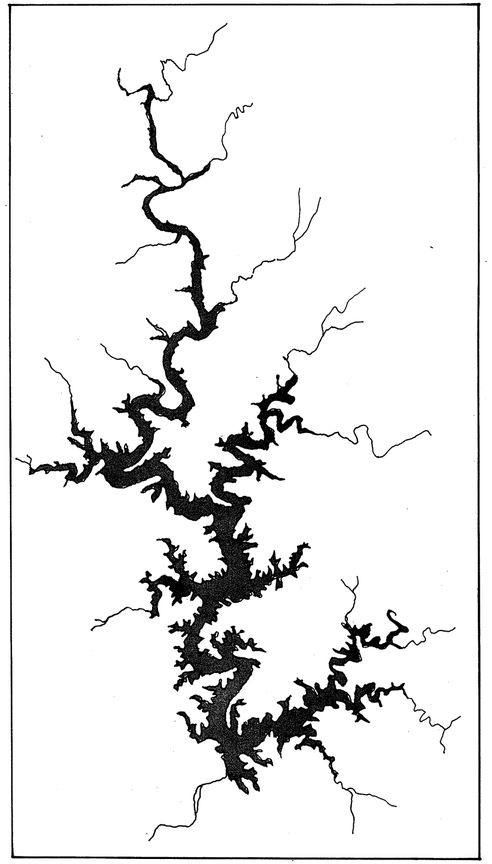


master plan for

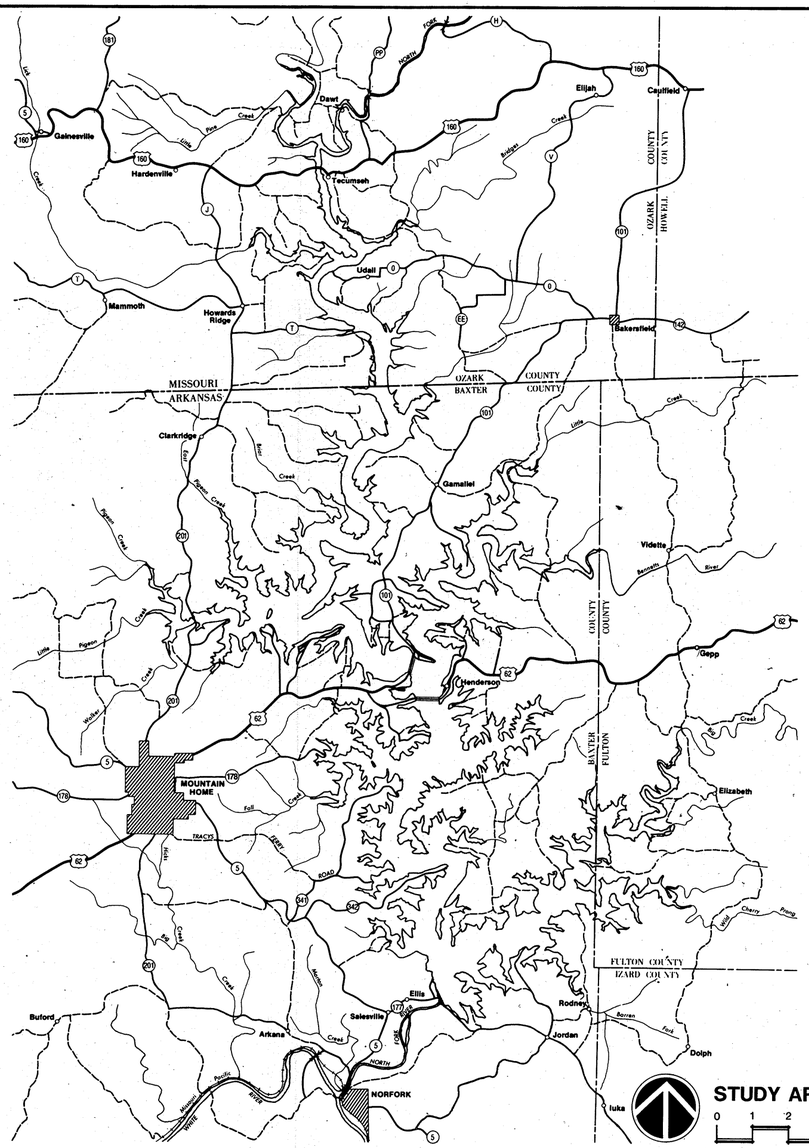
NORFORK LAKE

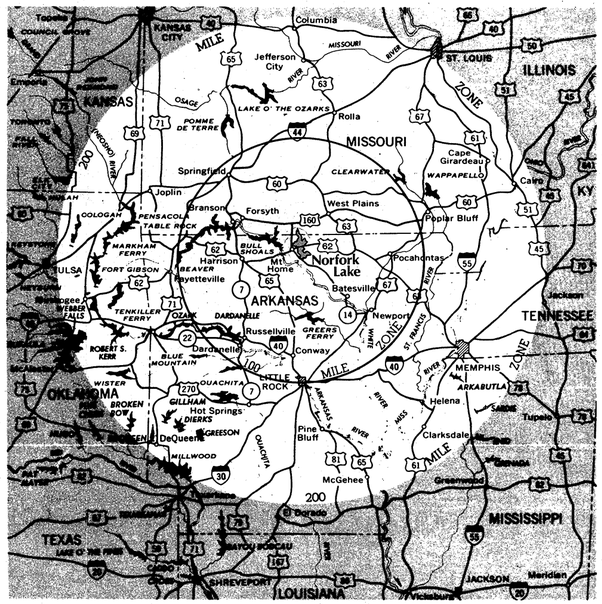
US Army Corps of Engineers,
Little Rock District

prepared by

Harland Bartholomew & Associates, Inc.

November 1987





master plan for
Norfork Lake

white river watershed
north fork river, arkansas and missouri

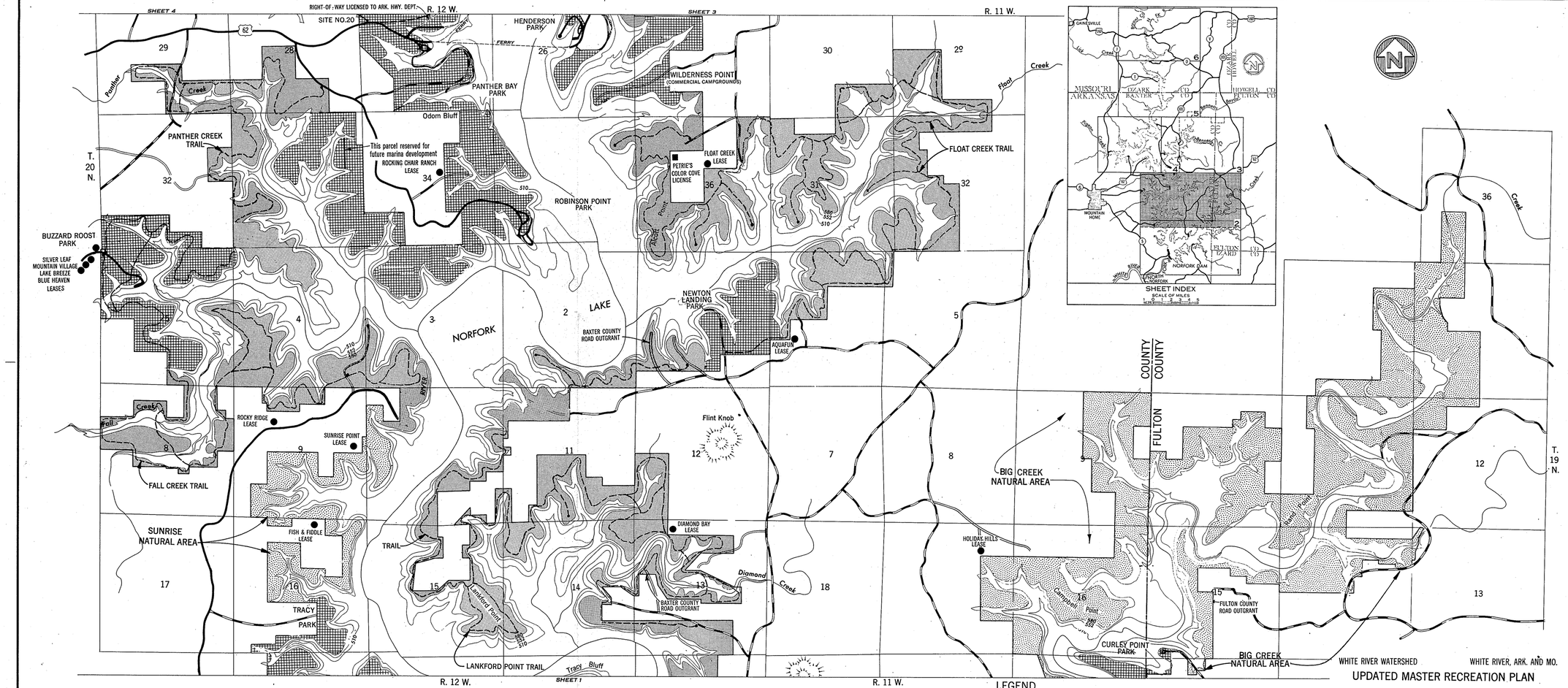
PROJECT LOCATION MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

Proj. Location Map

PLATE 2-01



LEGEND

- U. S. highway
- State highway
- Paved road
- Graveled road
- Graded road
- Fee acquisition line

PERTINENT ELEVATIONS (MSL)

- 584 Spillway design flood
- 580 Flood control pool
- 552 Top of conservation pool
- 510 Maximum power drawdown
- Project Operation
- Recreation - Intensive use
- Recreation - Low Density use
- Arkansas Game And Fish Commission Wildlife Refuge
- Natural Area
- Trail (Proposed)
- Trail (Existing)

WHITE RIVER WATERSHED — WHITE RIVER, ARK. AND MO.

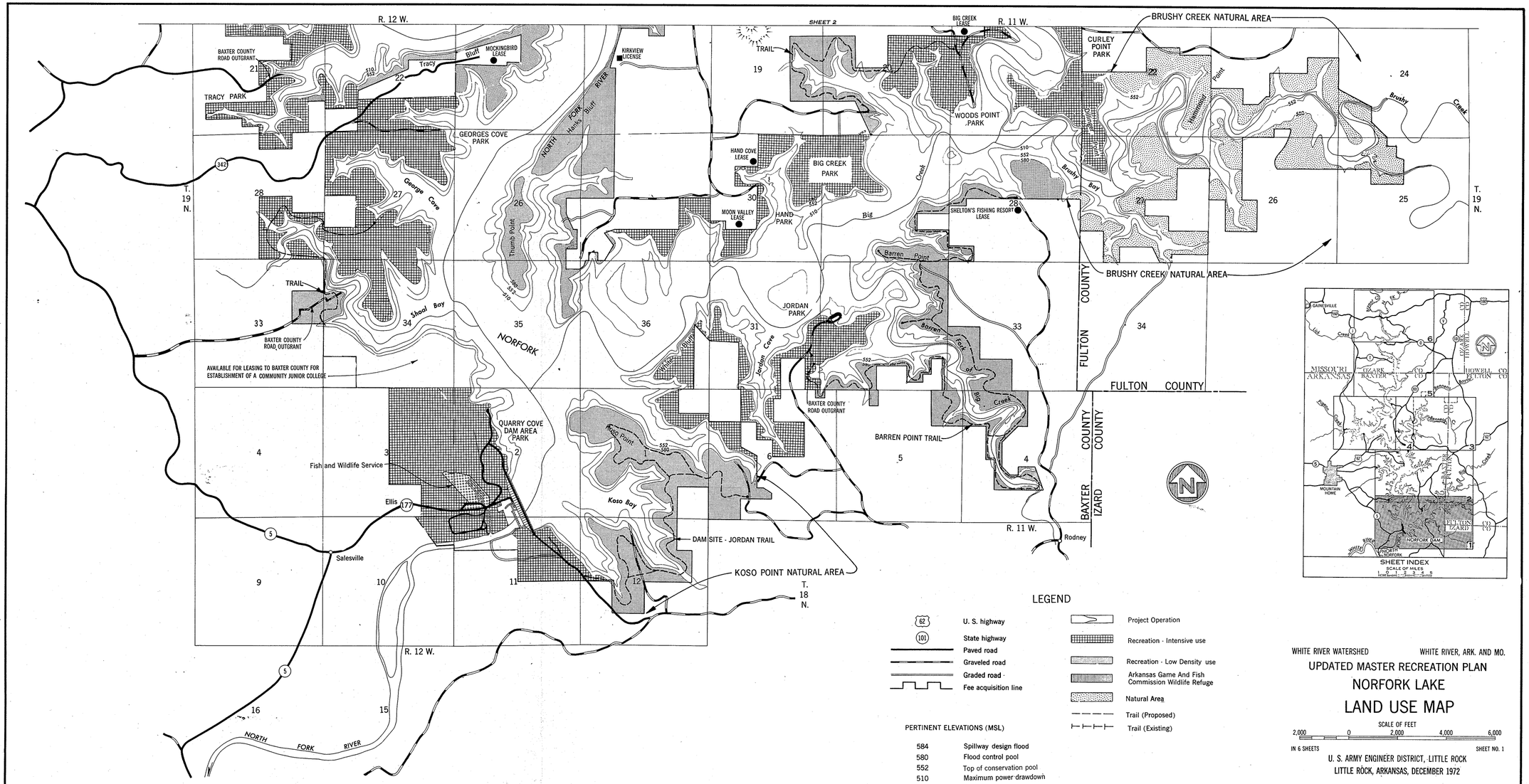
UPDATED MASTER RECREATION PLAN

NORFORK LAKE
LAND USE MAP

SCALE OF FEET
2,000 0 2,000 4,000 6,000

IN 6 SHEETS — SHEET NO. 2

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, DECEMBER 1972



LEGEND

- U. S. highway
- State highway
- Paved road
- Graveled road
- Graded road
- Fee acquisition line
- Project Operation
- Recreation - Intensive use
- Recreation - Low Density use
- Arkansas Game And Fish Commission Wildlife Refuge
- Natural Area
- Trail (Proposed)
- Trail (Existing)

PERTINENT ELEVATIONS (MSL)

584	Spillway design flood
580	Flood control pool
552	Top of conservation pool
510	Maximum power drawdown

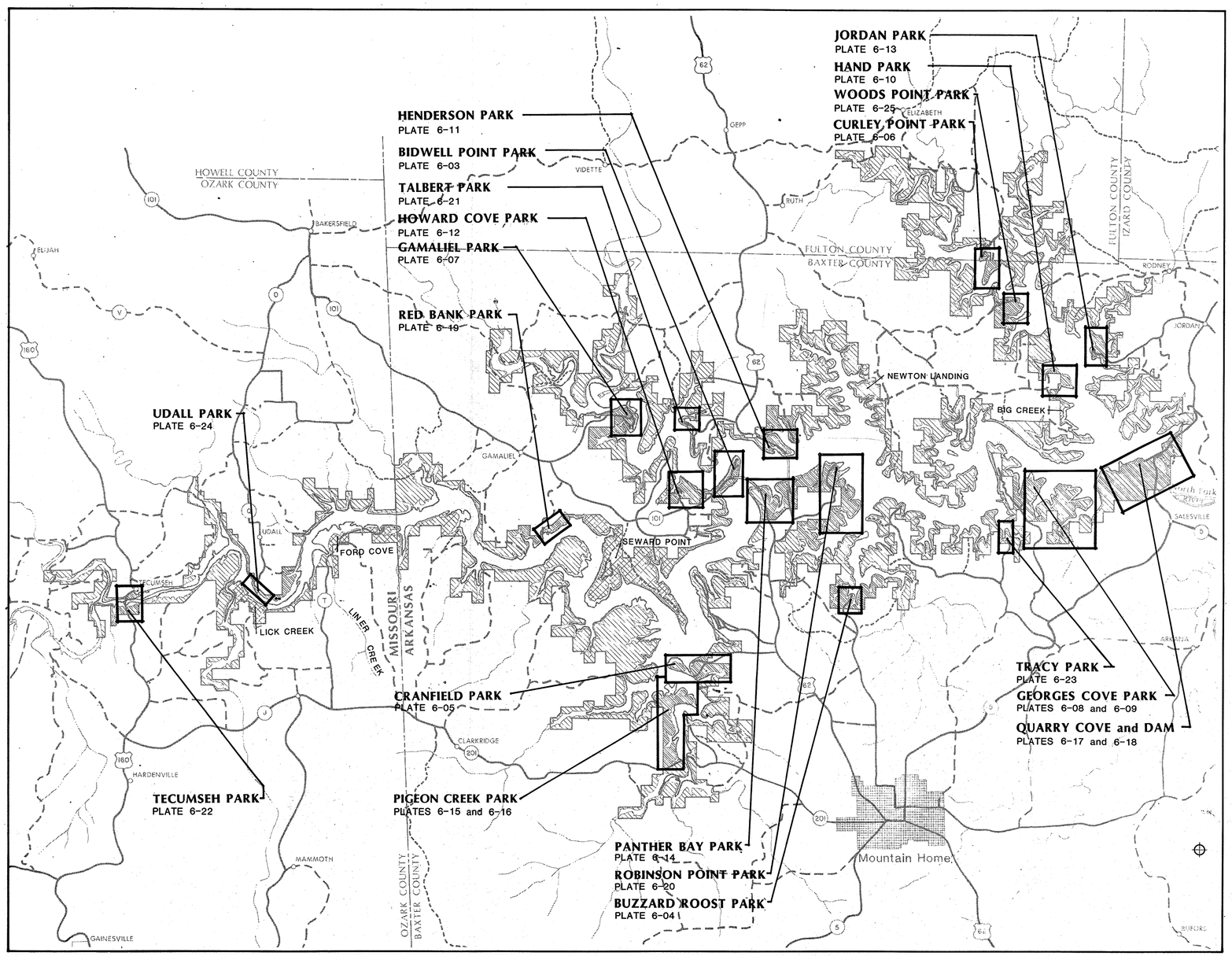
WHITE RIVER WATERSHED — WHITE RIVER, ARK. AND MO.

UPDATED MASTER RECREATION PLAN
NORFORK LAKE
LAND USE MAP

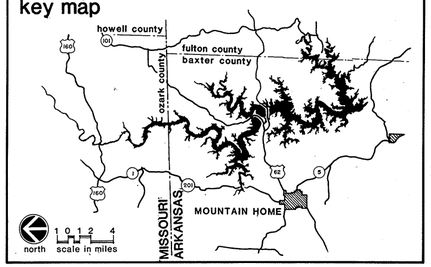
SCALE OF FEET
2,000 0 2,000 4,000 6,000

IN 6 SHEETS — SHEET NO. 1

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, DECEMBER 1972



key map



legend

Roads

- Paved Roads
- Gravel Roads
- U.S. Highway
- State Highway

Project Features

- Maximum Seasonal Pool Elev. 555
- Flood Control Pool Elev. 580
- Government Acquisition Boundary
- Project Operation Areas
- Existing Public Recreation Areas
- Future Recreation Areas

north — scale in miles: 1 0 1 2 4

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

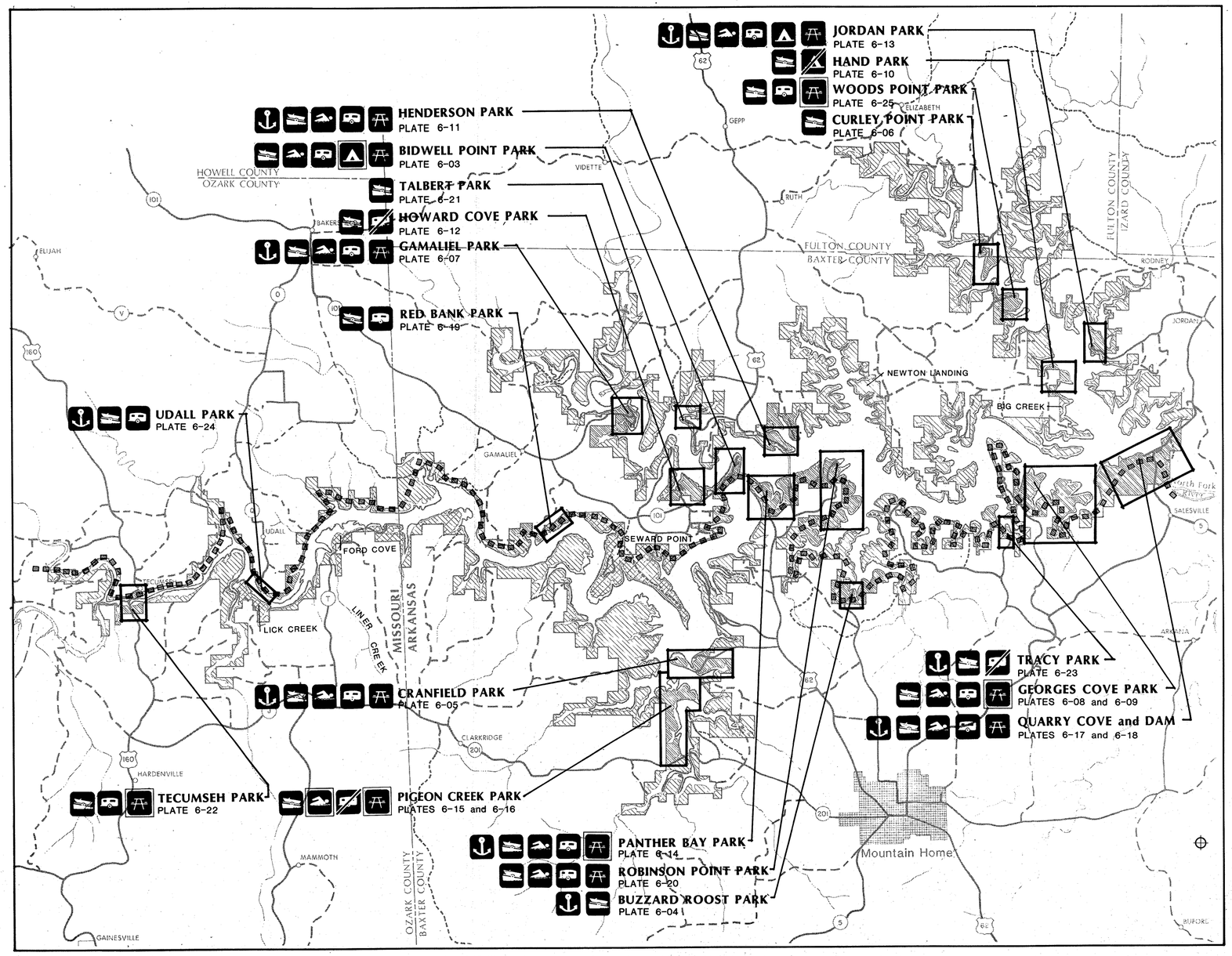
SITE LOCATION/KEY MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

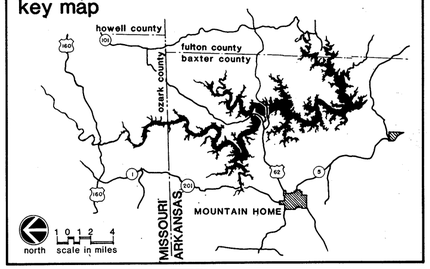
prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-01



key map



legend

Roads

Paved Roads
Gravel Roads
U.S. Highway
State Highway

Project Features

Maximum Seasonal Pool Elev. 555
Flood Control Pool Elev. 580
Government Acquisition Boundary
Project Operation Areas
Existing Public Recreation Areas
Future Recreation Areas

Recreation Facilities

Day Use/Picnic		Marina	
Primitive/Group Camping		Existing Activity	
Trailer/Tent Camping		Activity to be phased out	
Swimming Beach		Proposed Activity	
Boat Launch Ramp		Proposed Trail	

north — scale in miles: 1 0 1 2 4

master plan for Norfork Lake
FACILITIES DISTRIBUTION MAP

white river watershed
north fork river, arkansas and missouri

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-02

Existing Facilities

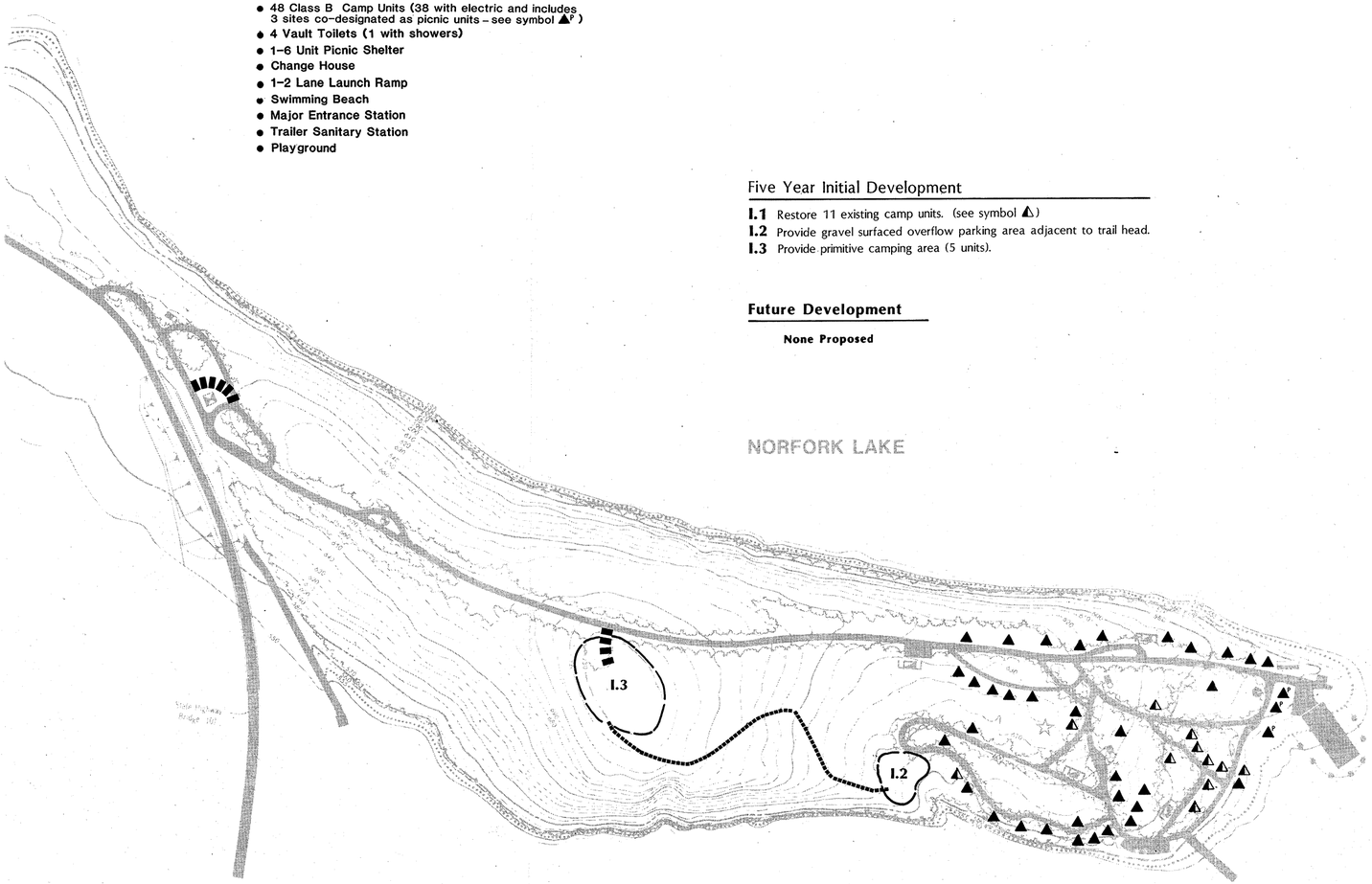
- 48 Class B Camp Units (38 with electric and includes 3 sites co-designated as picnic units – see symbol ▲P)
- 4 Vault Toilets (1 with showers)
- 1–6 Unit Picnic Shelter
- Change House
- 1–2 Lane Launch Ramp
- Swimming Beach
- Major Entrance Station
- Trailer Sanitary Station
- Playground

Five Year Initial Development

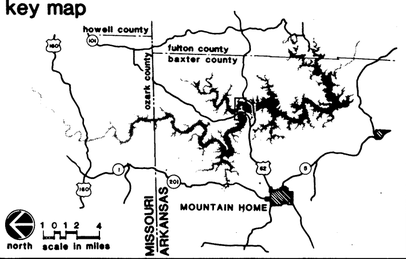
I.1 Restore 11 existing camp units. (see symbol ▲)
I.2 Provide gravel surfaced overflow parking area adjacent to trail head.
I.3 Provide primitive camping area (5 units).

Future Development

None Proposed



key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5
Existing Vegetation — Not Indicated
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms– water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north — 200 0 100 200 400 800 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

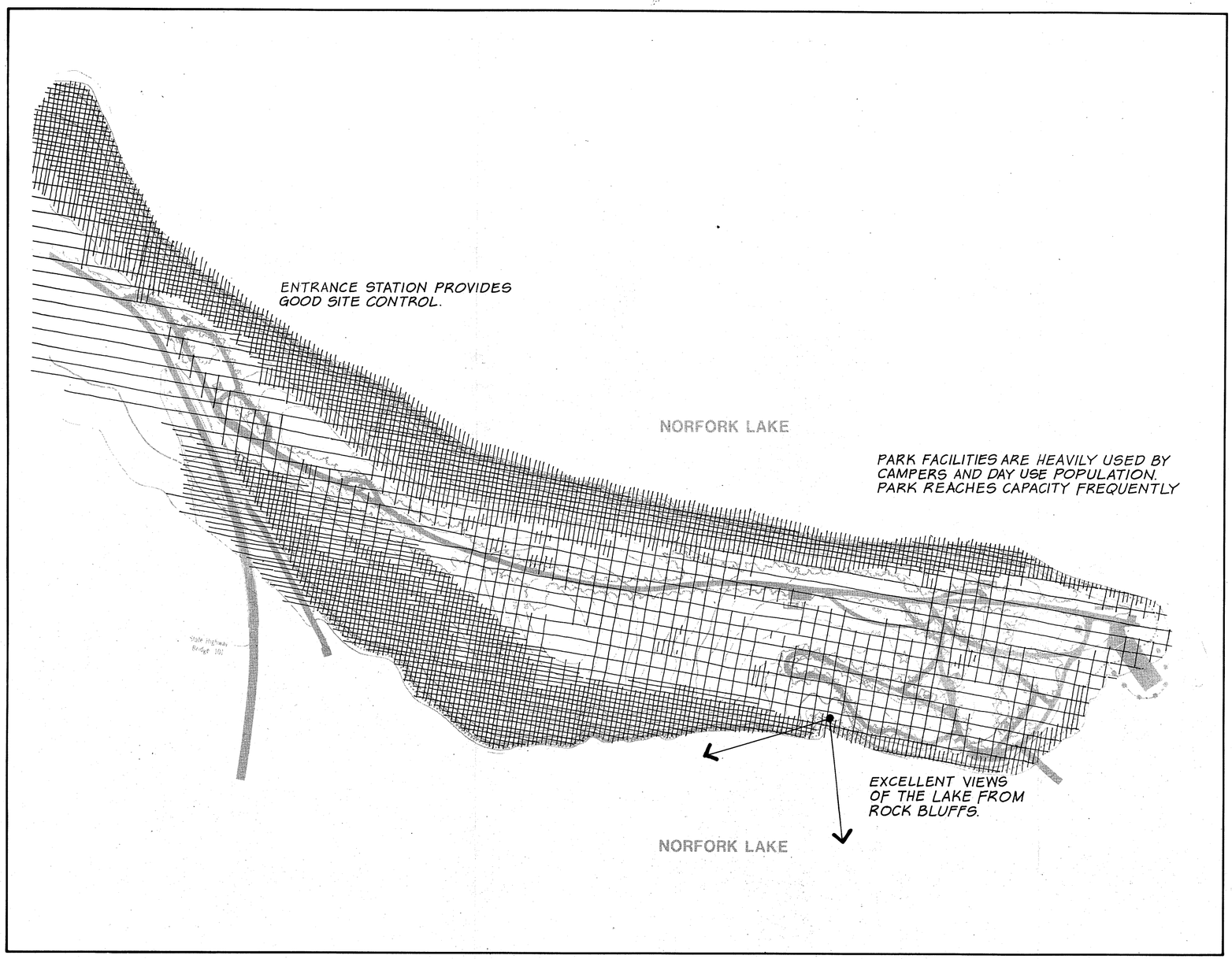
BIDWELL POINT PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

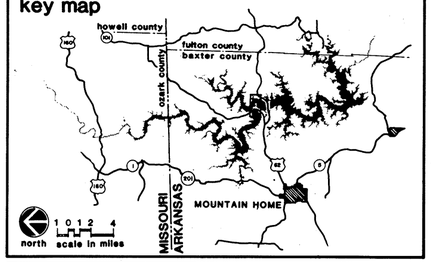
prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-03B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation — Not Indicated
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

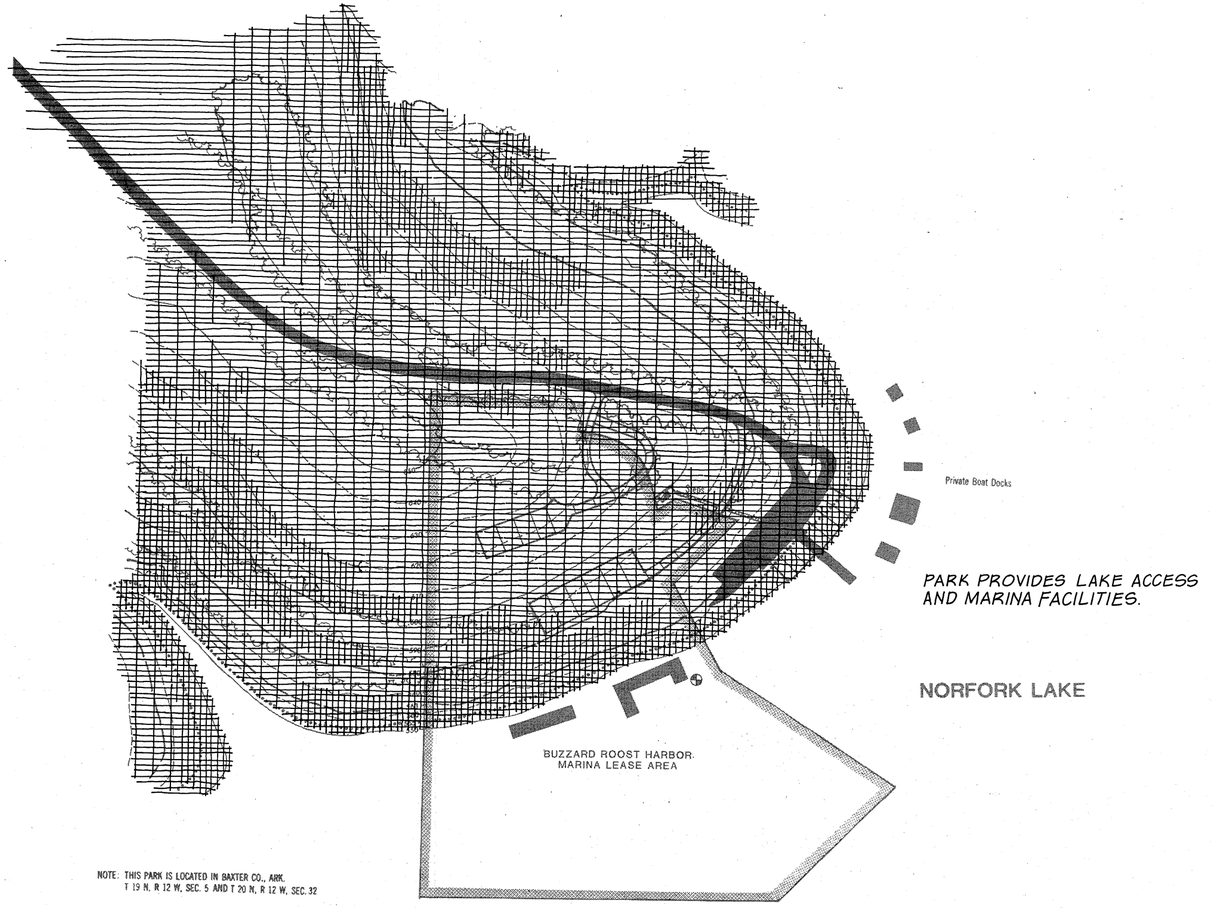
BIDWELL POINT PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

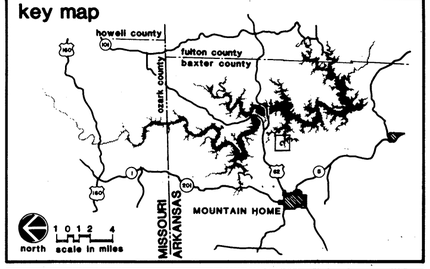
November 1987

PLATE 6-03A



NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK. T 19 N, R 12 W, SEC. 5 AND T 20 N, R 12 W, SEC. 32

key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 583
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

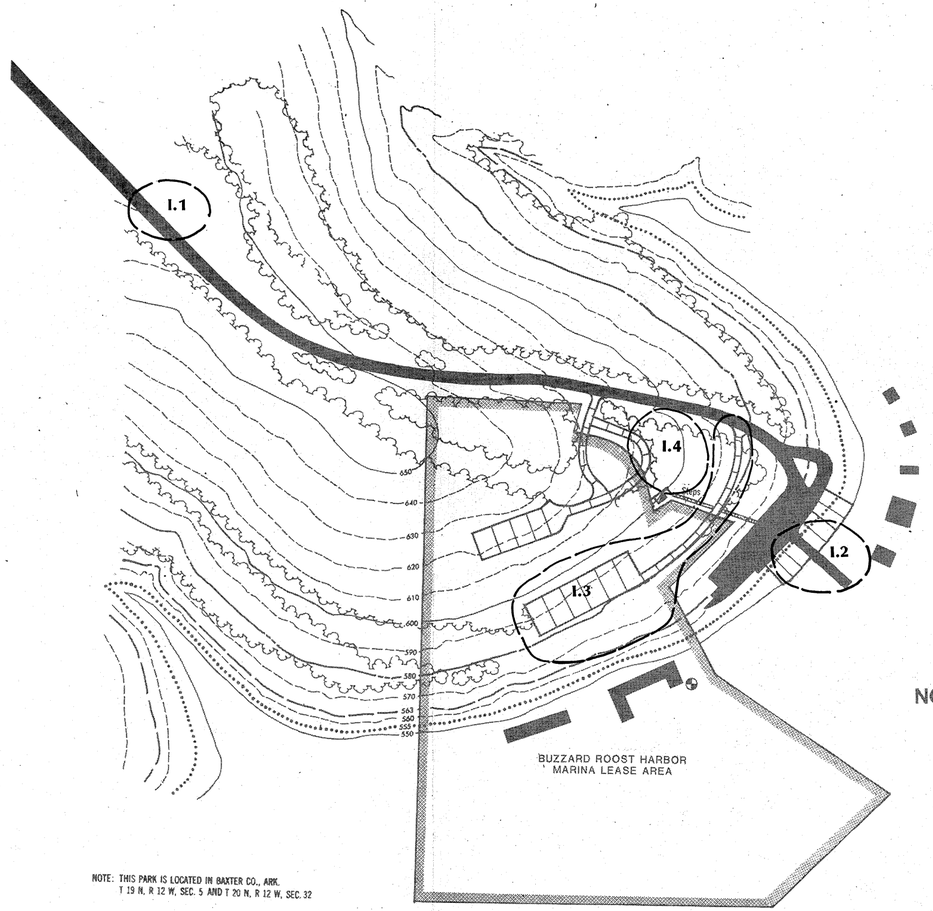
BUZZARD ROOST PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-04A



NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 19 N, R 12 W, SEC. 5 AND T 20 N, R 12 W, SEC. 32

Existing Facilities

- 1 Vault Toilet
- 1–1Lane Launch Ramp
- High Water Parking Area
- Marina w/ Sanitary Station

Private Boat Docks

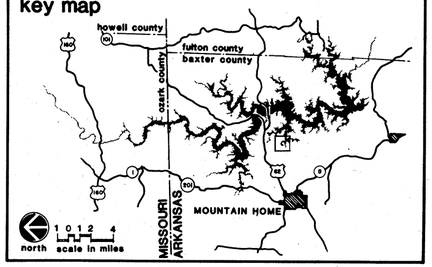
Five Year Initial Development

I.1 Maintain this park as a lake access point.
I.2 Provide 1 additional launch lane.
I.3 Pave high water parking area and access road, and seed slopes to stop erosion and siltation of cove.
I.4 Remove remnants of abandoned camp units.

Future Development

None Proposed

key map



legend

Existing Conditions

Natural Features
Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5 — Not Indicated
Existing Vegetation
Park Boundaries

Roads
Paved
Gravel

Recreational Facilities
Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north

200 0 100 200 400 800
scale in feet

master plan for Norfork Lake

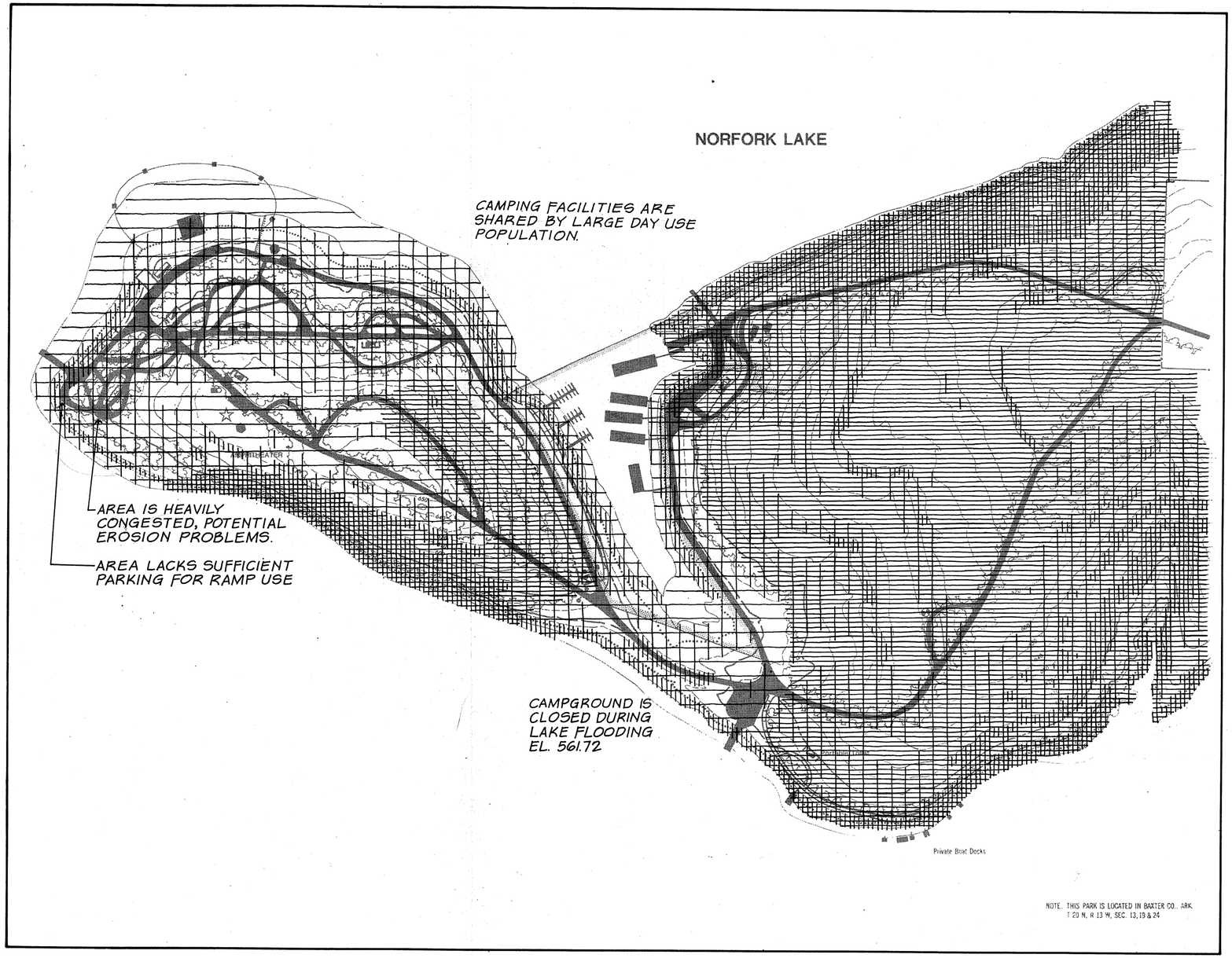
white river watershed
north fork river, arkansas and missouri

BUZZARD ROOST PARK DEVELOPMENT PLAN

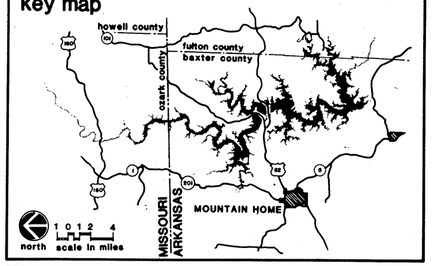
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

PLATE 2-24B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation
- Park Boundaries

Not Indicated

Not Indicated

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

200 0 100 200 400 800

north scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

CRANFIELD PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

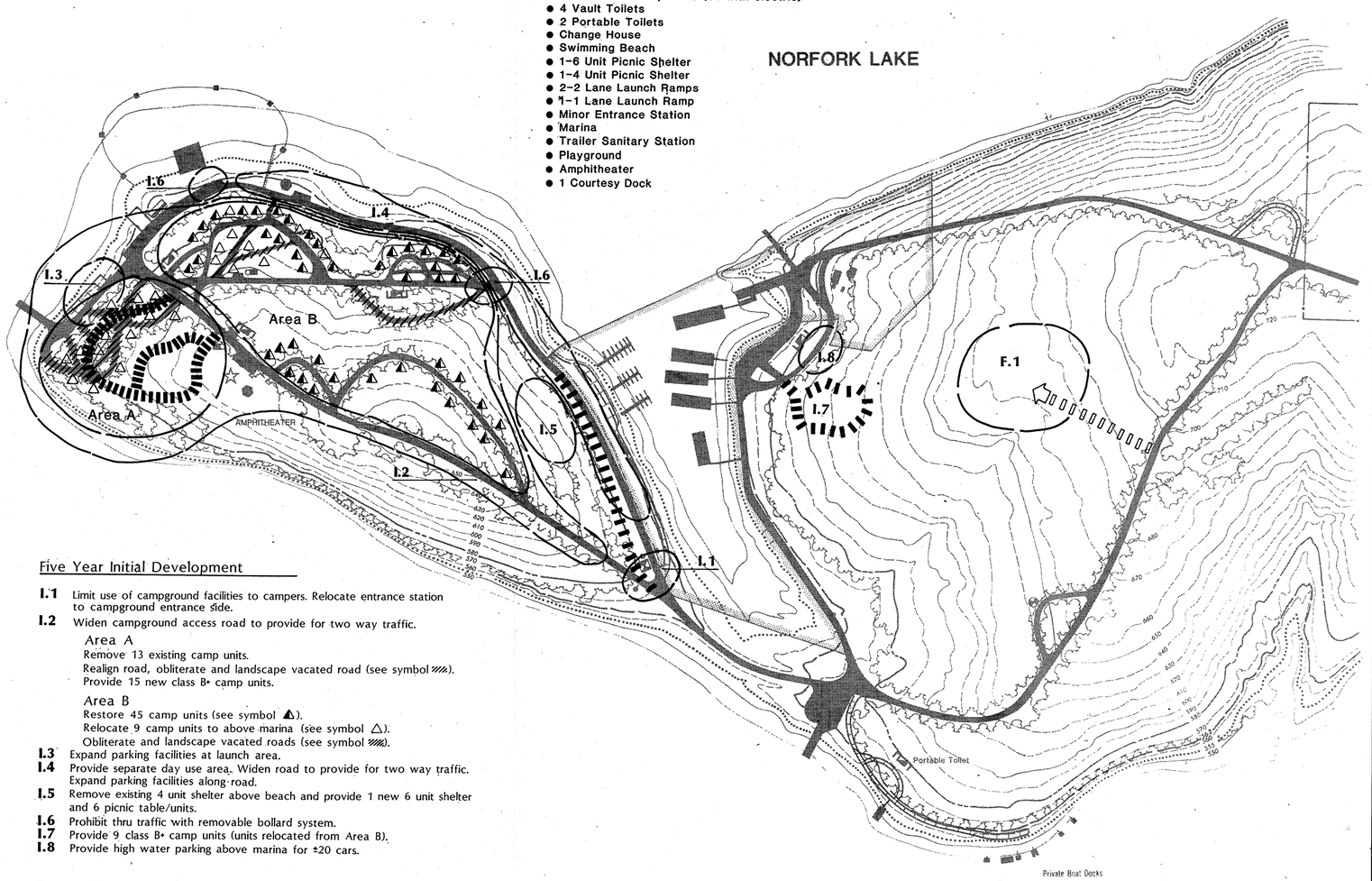
prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-05A

Existing Facilities

- 74 Class B+ Camp Units (61 with electric)
- 4 Vault Toilets
- 2 Portable Toilets
- Change House
- Swimming Beach
- 1-6 Unit Picnic Shelter
- 1-4 Unit Picnic Shelter
- 2-2 Lane Launch Ramps
- 1-1 Lane Launch Ramp
- Minor Entrance Station
- Marina
- Trailer Sanitary Station
- Playground
- Amphitheater
- 1 Courtesy Dock



NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 20 N, R 13 W, SEC. 13, 19 & 24

Five Year Initial Development

I.1 Limit use of campground facilities to campers. Relocate entrance station to campground entrance side.

I.2 Widen campground access road to provide for two way traffic.

Area A
Remove 13 existing camp units.
Realign road, obliterate and landscape vacated road (see symbol ▨).
Provide 15 new class B+ camp units.

Area B
Restore 45 camp units (see symbol ▲).
Relocate 9 camp units to above marina (see symbol △).
Obliterate and landscape vacated roads (see symbol ▨).

I.3 Expand parking facilities at launch area.

I.4 Provide separate day use area. Widen road to provide for two way traffic. Expand parking facilities along road.

I.5 Remove existing 4 unit shelter above beach and provide 1 new 6 unit shelter and 6 picnic table/units.

I.6 Prohibit thru traffic with removable bollard system.

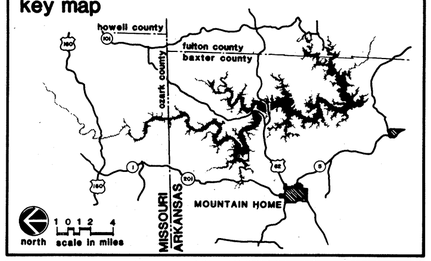
I.7 Provide 9 class B+ camp units (units relocated from Area B).

I.8 Provide high water parking above marina for ±20 cars.

Future Development

F.1 **Provide 15 primitive/group camp units with controlled access.**

key map



legend

Existing Conditions

Natural Features
Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 583
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5 — Not Indicated
Existing Vegetation
Park Boundaries

Roads
Paved
Gravel

Recreational Facilities
Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development
Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development
Proposed Improvements — F.1
Roads
Trails

north — 200 0 100 200 400 800 — scale in feet

master plan for Norfork Lake

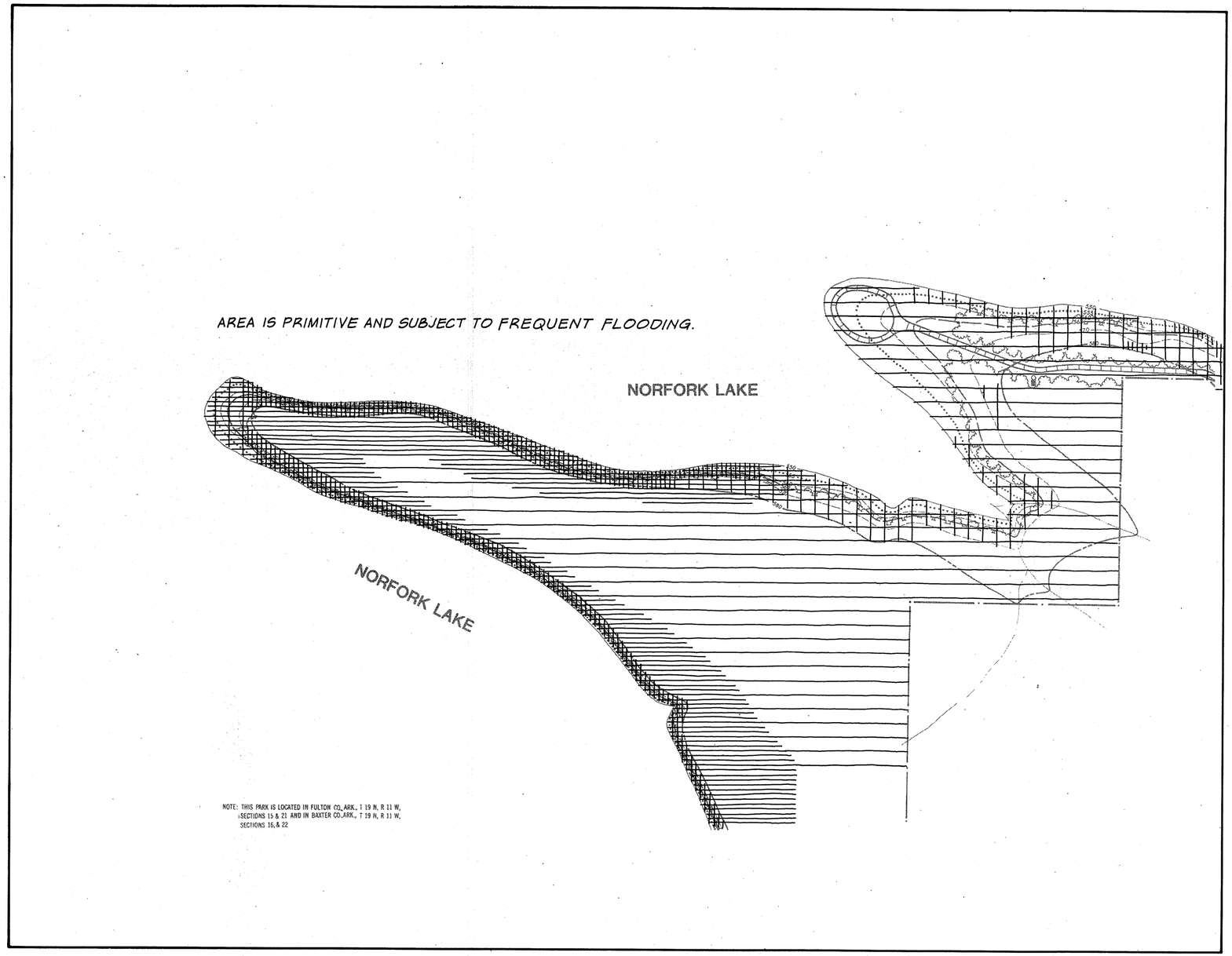
white river watershed
north fork river, arkansas and missouri

CRANFIELD PARK DEVELOPMENT PLAN

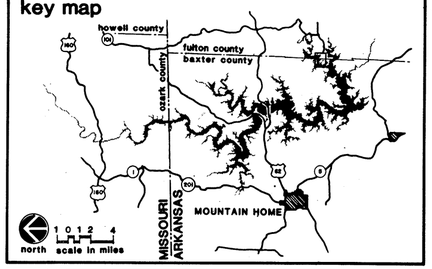
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

PLATE 6-05B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

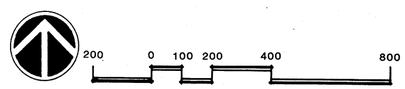
- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations



master plan for
Norfork Lake
white river watershed
north fork river, arkansas and missouri

CURLEY POINT PARK
COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-06A

Existing Facilities

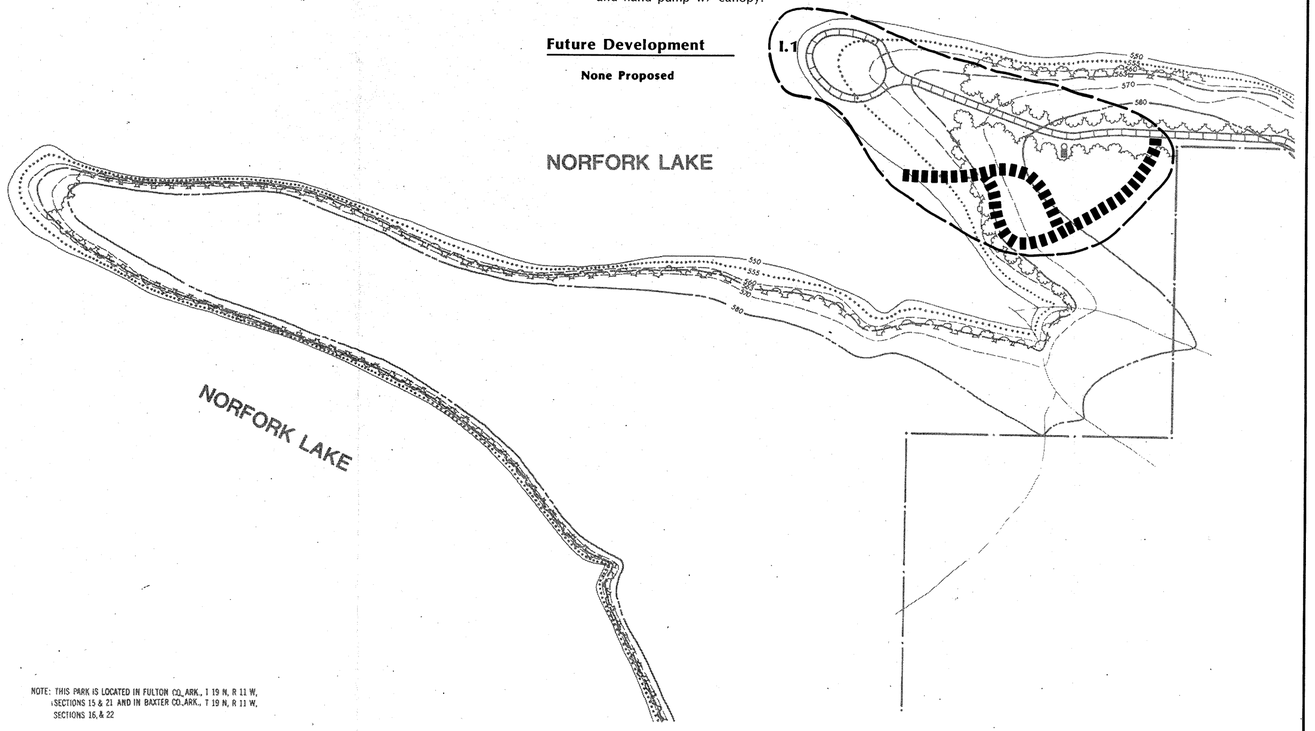
- No Recreational Facilities Are Available
- Camping By Permit Only

Five Year Initial Development

I.1 Provide a 1 lane launch ramp with parking. Remove remnants of abandoned camp units and hand pump w/ canopy.

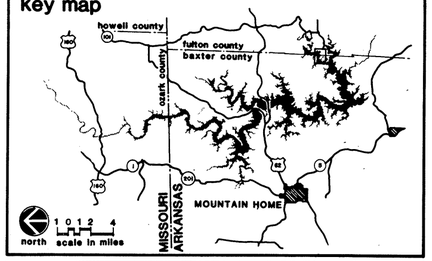
Future Development

None Proposed



NOTE: THIS PARK IS LOCATED IN FULTON CO., ARK., T 19 N, R 11 W, SECTIONS 15 & 21 AND IN BAXTER CO.,ARK., T 19 N, R 11 W, SECTIONS 16, & 22

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Five Year Initial Development

- Proposed Improvements — I.1
- Roads
- Trails
- Existing Camp Units to Remain
- Existing Camp Units to be Restored
- Existing Camp Units to be Removed

Future Development

- Proposed Improvements — F.1
- Roads
- Trails

north — 200 0 100 200 400 800 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

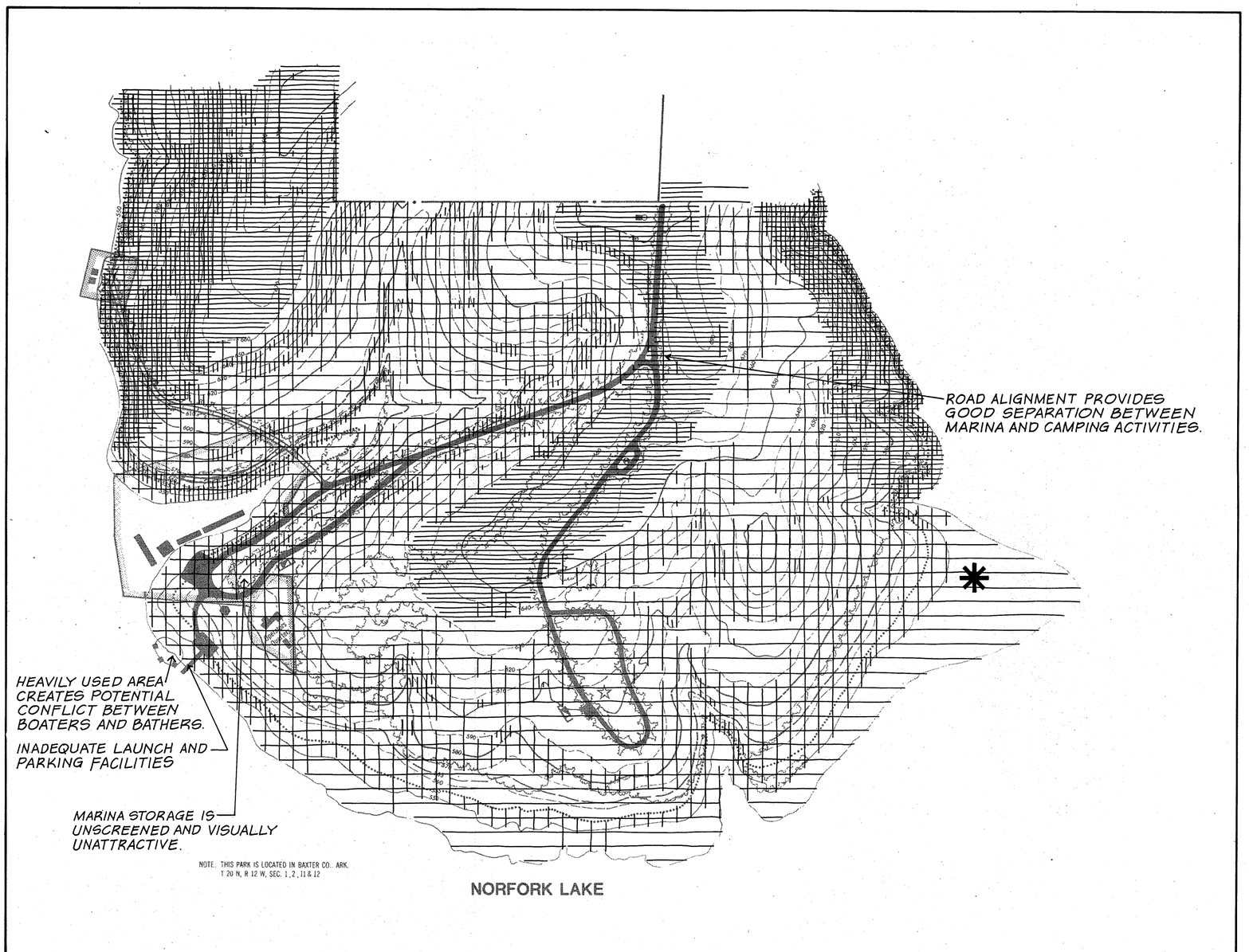
CURLEY POINT PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

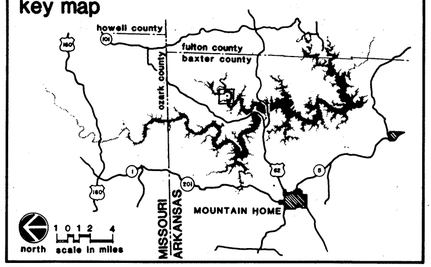
prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-06B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north — 200 0 100 200 400 800 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

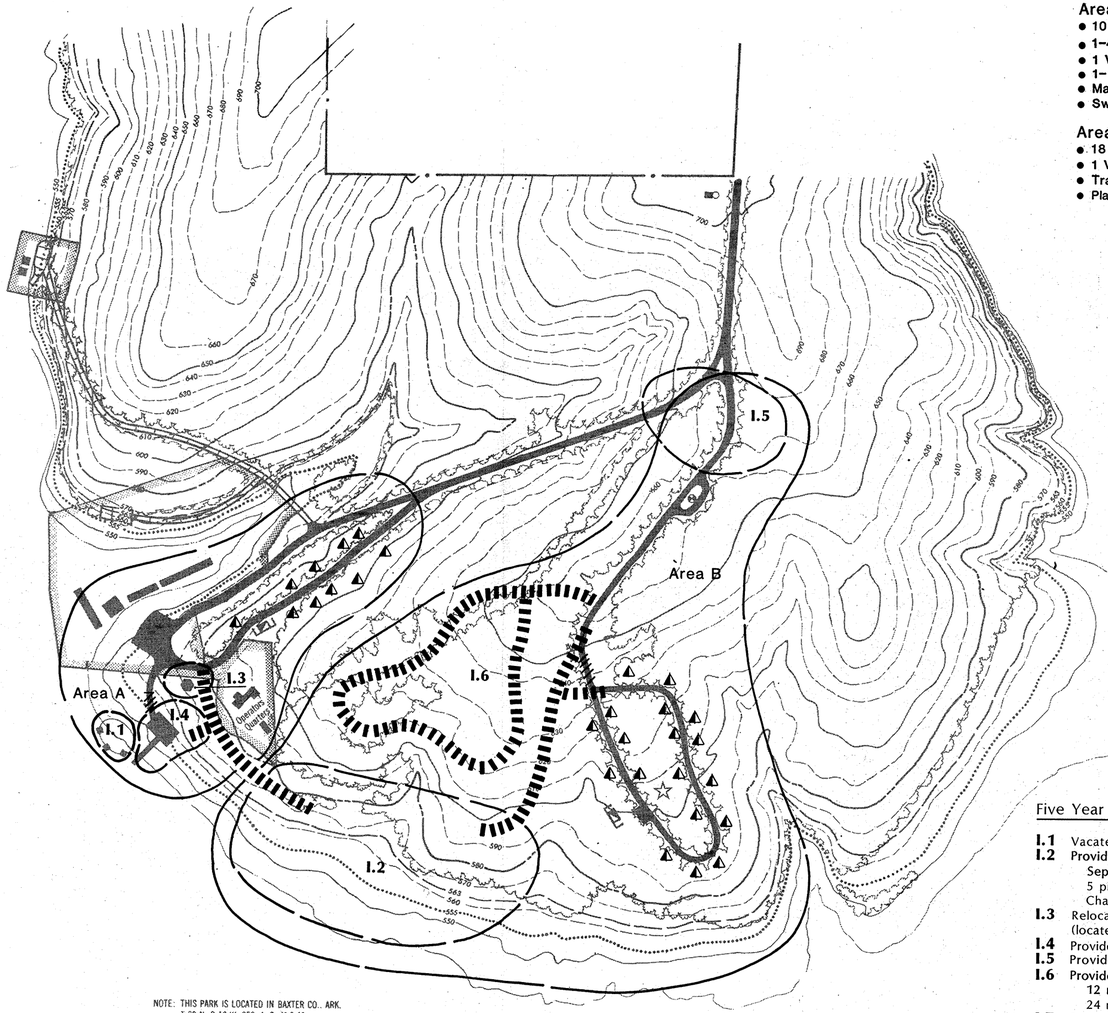
GAMALIEL PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-07A



NORFORK LAKE

Existing Facilities

Area A
- 10 Class B+ Camp Units w/electric
- 1-4 Unit Picnic Shelter
- 1 Vault Toilet
- 1-1 Lane Launch Ramp
- Marina
- Swimming Beach

Area B
- 18 Class B+ Camp Units w/ Electric
- 1 Vault Toilet w/ Showers
- Trailer Sanitary Station
- Playground

Future Development

None Proposed

Five Year Initial Development

I.1 Vacate existing beach

I.2 Provide new beach and day use area with -
- Separate parking for day users and campers
- 5 picnic table/units
- Change house with vault toilets and showers

I.3 Relocate existing picnic shelter to new day use area (locate above el. 570.0)

I.4 Provide 1 additional launch lane with high water parking

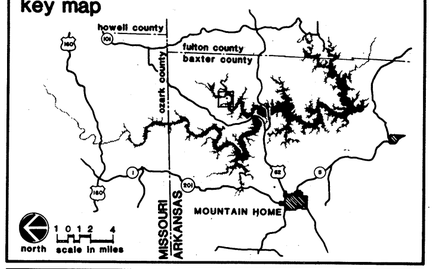
I.5 Provide entrance station and control gate to campground's

I.6 Provide 36 class B+ camp units
- 12 relocated from Howard Cove Park
- 24 new camp units

I.7 Restore existing camp units (see symbol ◭)

I.8 Obliterate and landscape vacated roadbeds (see symbol ///)

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 583
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5 — Not Indicated
Existing Vegetation
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north — scale in feet: 200 0 100 200 400 800

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

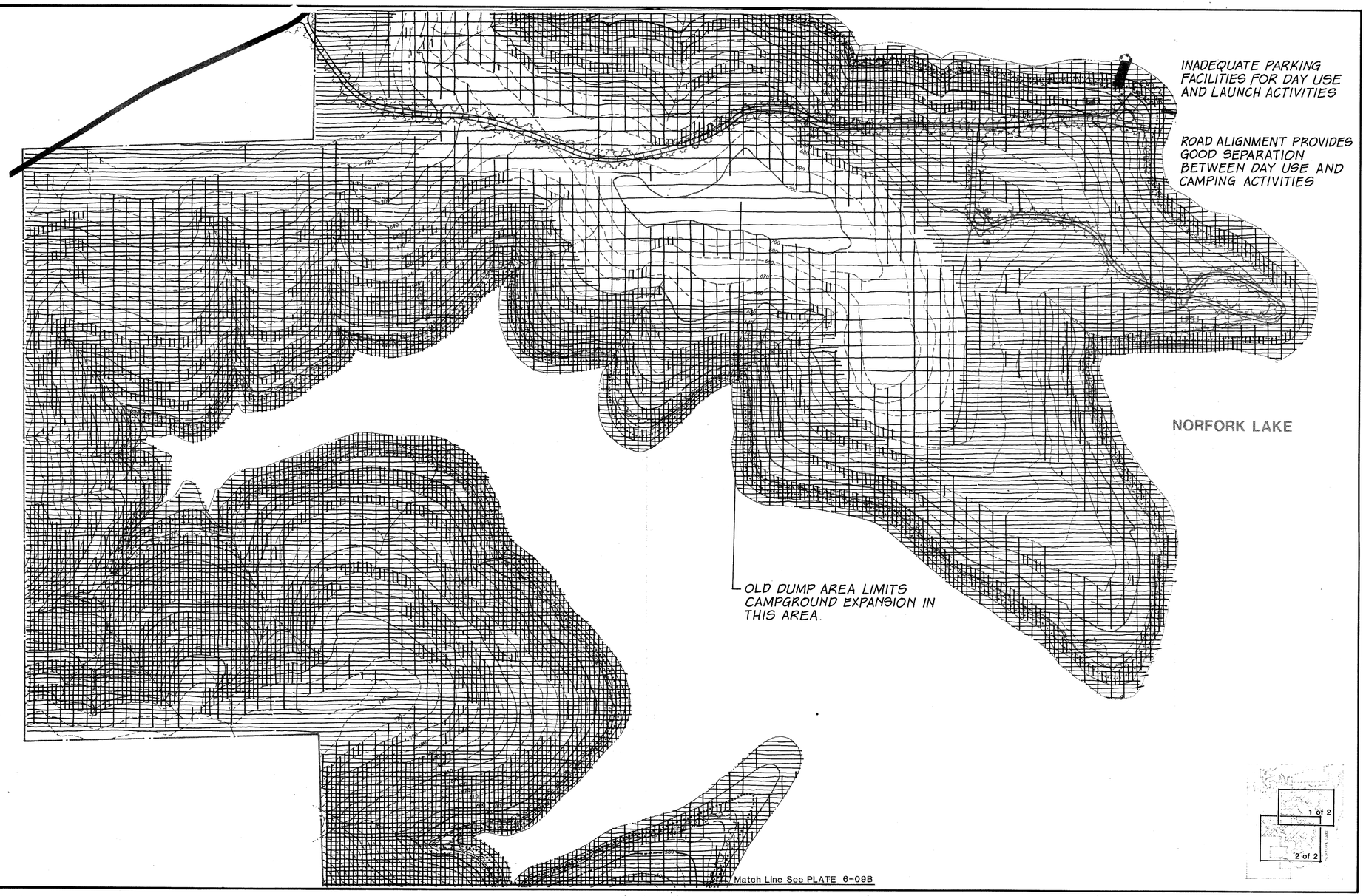
GAMALIEL PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

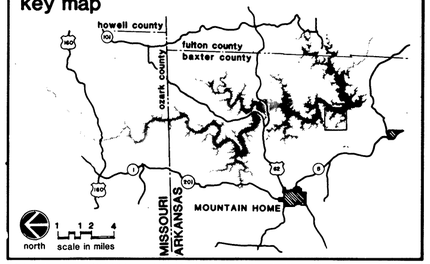
prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-07B



key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Development Constraints and Opportunities

Unique Vegetation / Habitat
Scenic Views
Slopes Greater than 12%
Slopes Greater than 25%
Moderate Soil Limitations
Severe Soil Limitations

north

400 0 200 400 800 1600

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

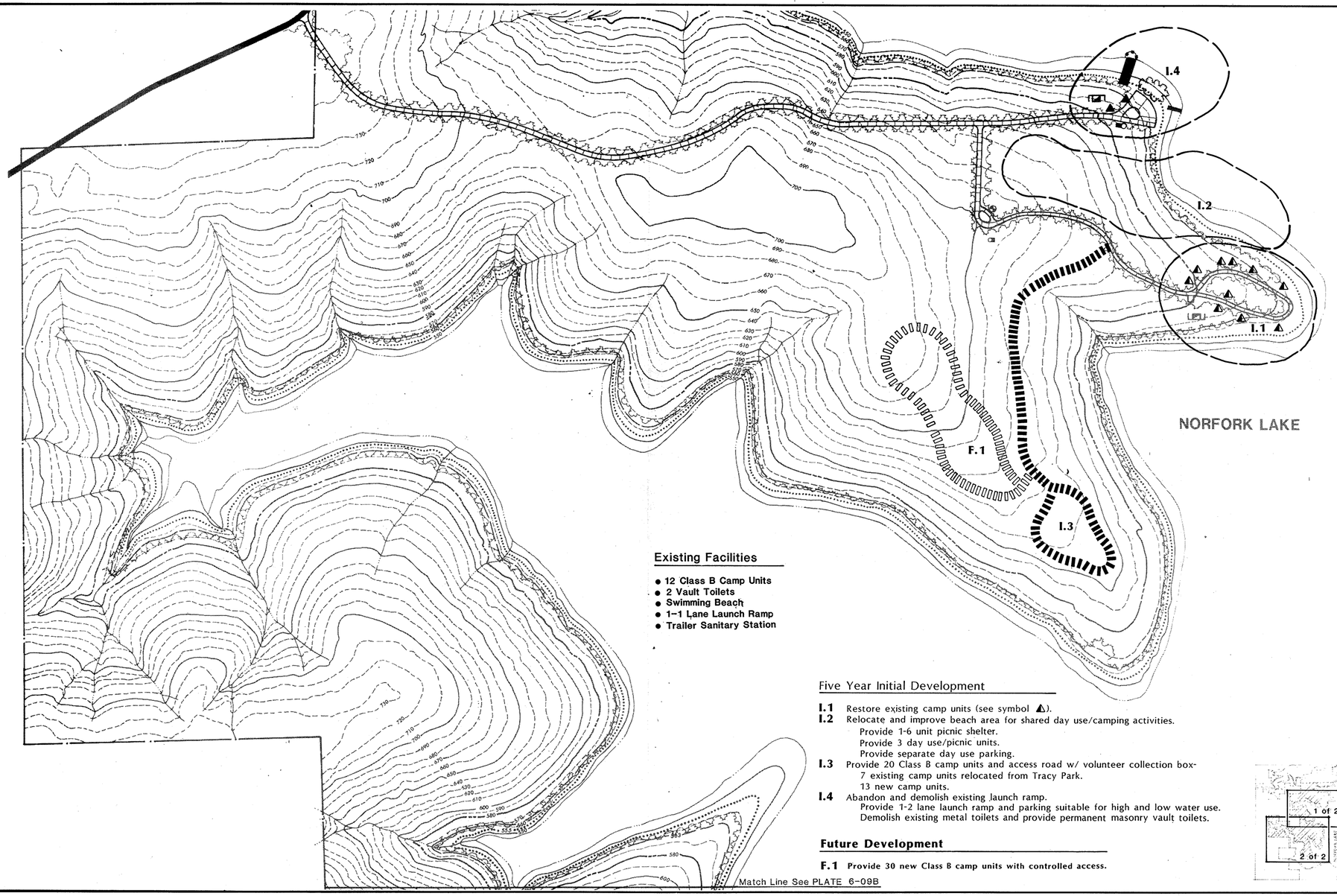
GEORGES COVE PARK COMPOSITE ANALYSIS MAP

Sheet 1 of 2

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987

PLATE 6-08A



Existing Facilities

- 12 Class B Camp Units
- 2 Vault Toilets
- Swimming Beach
- 1-1 Lane Launch Ramp
- Trailer Sanitary Station

Five Year Initial Development

I.1 Restore existing camp units (see symbol ▲).

I.2 Relocate and improve beach area for shared day use/camping activities.
- Provide 1-6 unit picnic shelter.
- Provide 3 day use/picnic units.
- Provide separate day use parking.

I.3 Provide 20 Class B camp units and access road w/ volunteer collection box-
- 7 existing camp units relocated from Tracy Park.
- 13 new camp units.

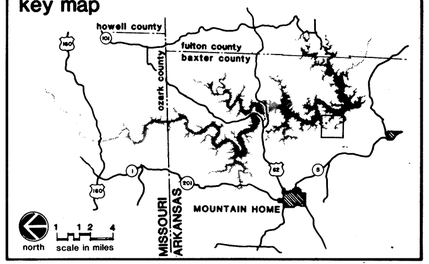
I.4 Abandon and demolish existing launch ramp.
- Provide 1-2 lane launch ramp and parking suitable for high and low water use.
- Demolish existing metal toilets and provide permanent masonry vault toilets.

Future Development

F.1 Provide 30 new Class B camp units with controlled access.

Match Line See PLATE 6-09B

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north — 200 0 100 200 400 800 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

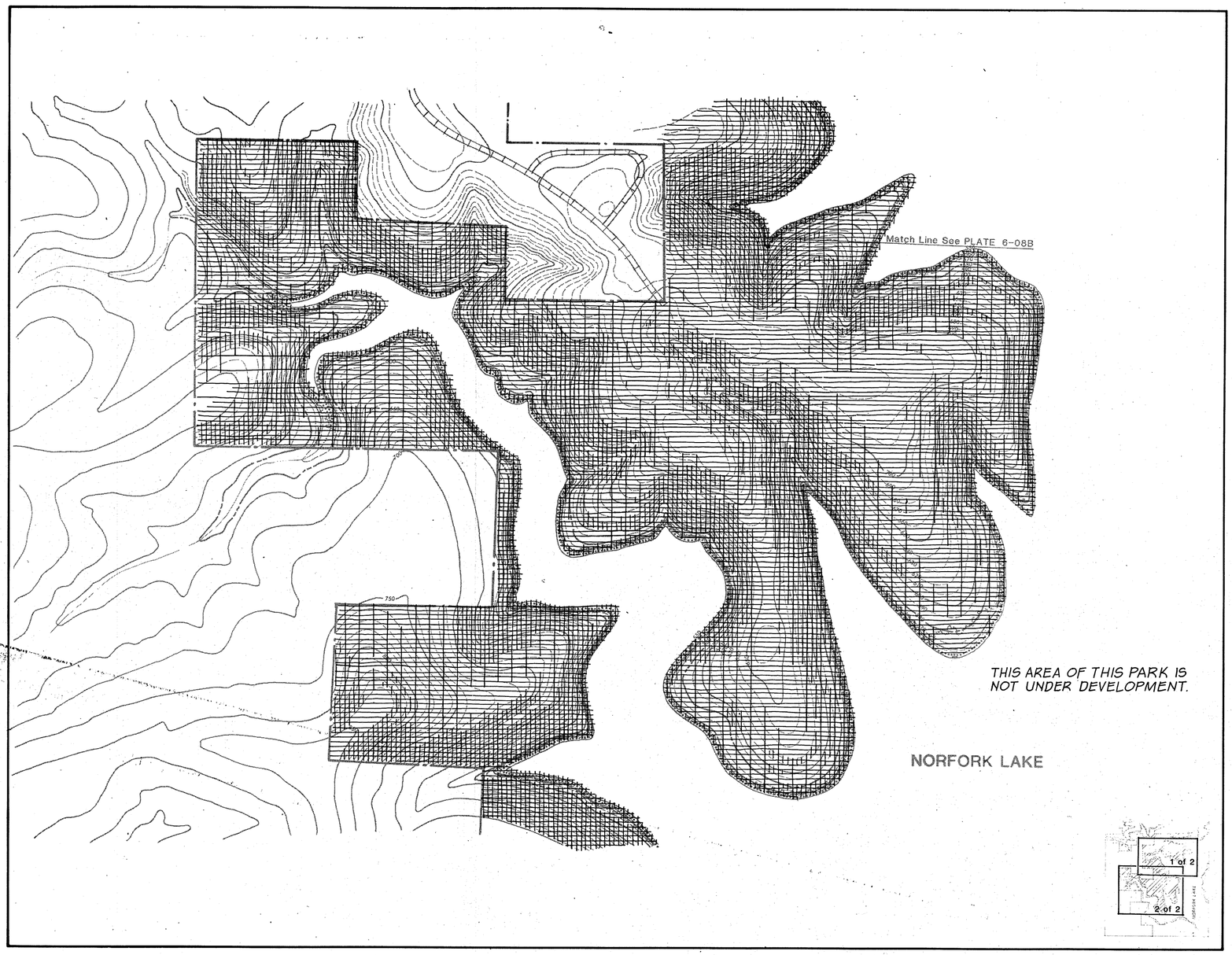
GEORGES COVE PARK DEVELOPMENT PLAN

Sheet 1 of 2

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri

November 1987



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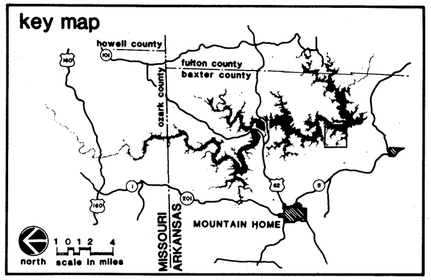


legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

400 0 200 400 800 1600

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

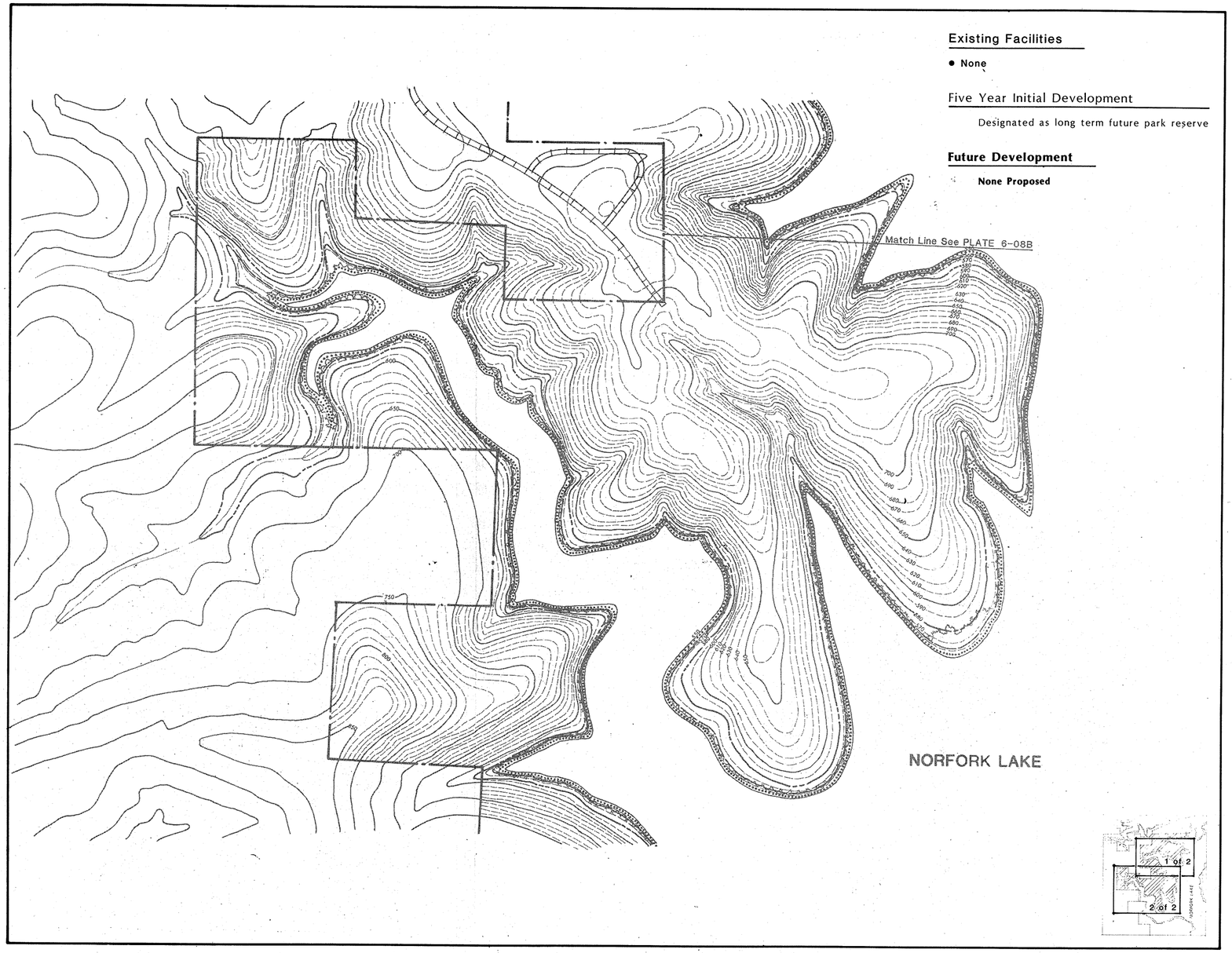
GEORGES COVE PARK COMPOSITE ANALYSIS MAP

Sheet 2 of 2

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987



Existing Facilities

- None

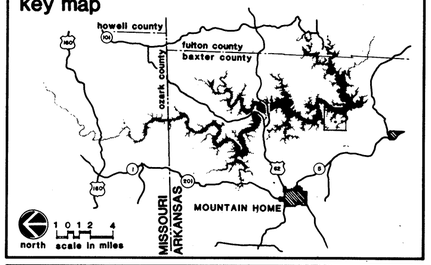
Five Year Initial Development

Designated as long term future park reserve

Future Development

None Proposed

key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Five Year Initial Development

- Proposed Improvements — I.1
- Roads
- Trails
- Existing Camp Units to Remain
- Existing Camp Units to be Restored
- Existing Camp Units to be Removed

Future Development

- Proposed Improvements — F.1
- Roads
- Trails

north — 400 0 200 400 800 1600 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

GEORGES COVE PARK DEVELOPMENT PLAN

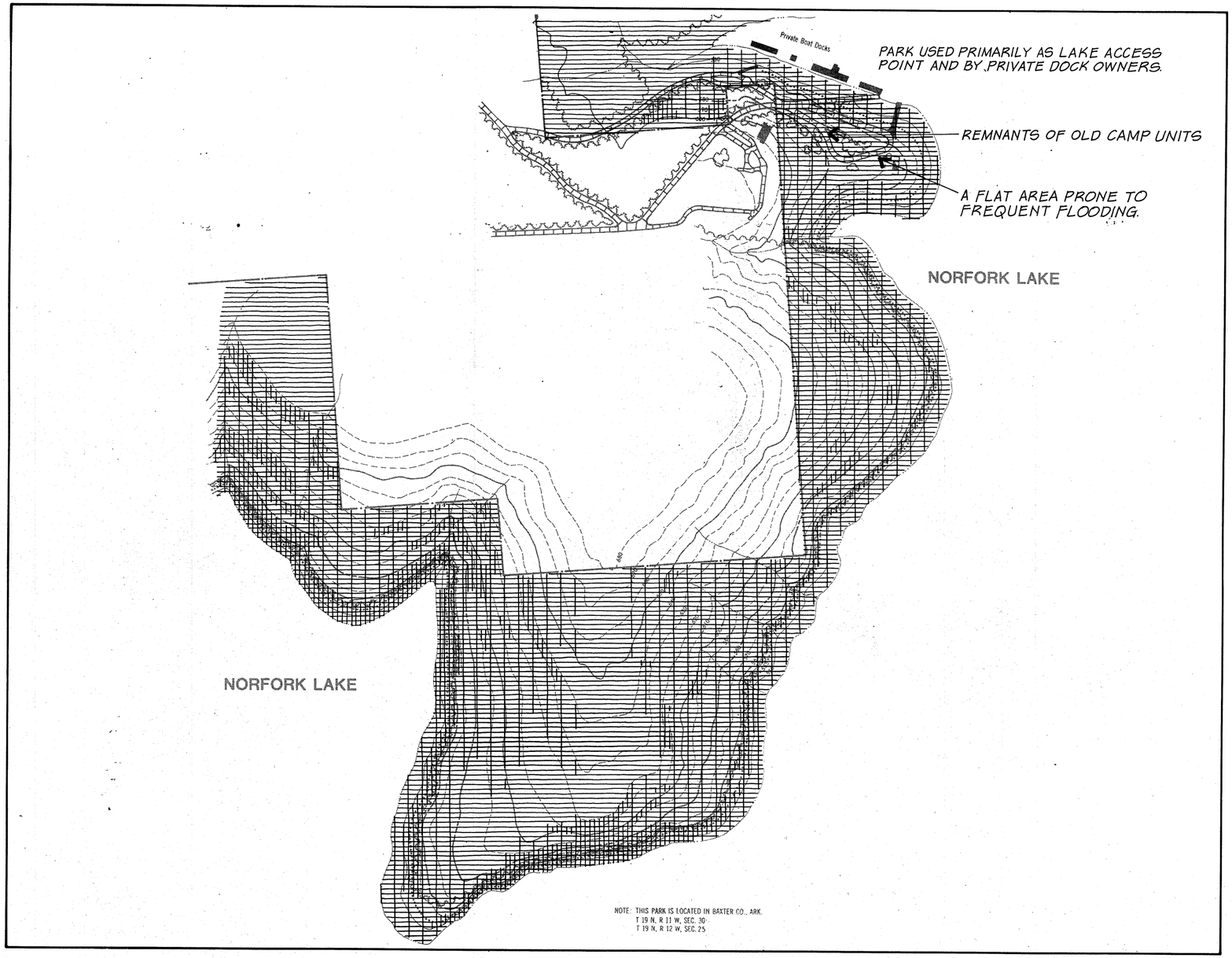
Sheet 2 of 2

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-09B



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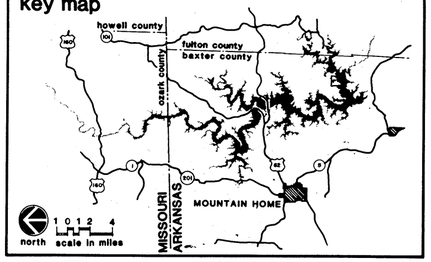


legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation — Not Indicated
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

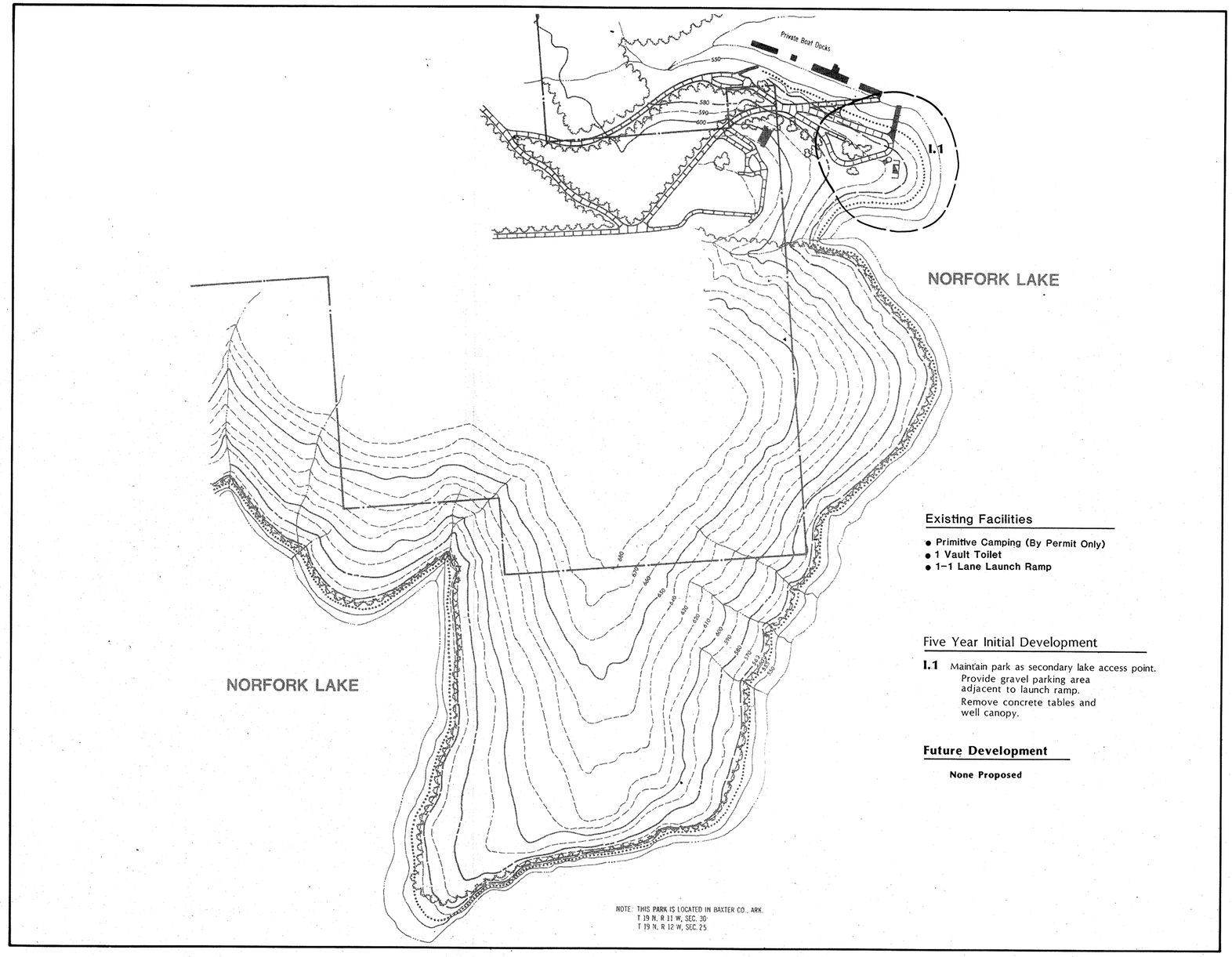
white river watershed
north fork river, arkansas and missouri

HAND PARK
COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987



Existing Facilities

- Primitive Camping (By Permit Only)
- 1 Vault Toilet
- 1-1 Lane Launch Ramp

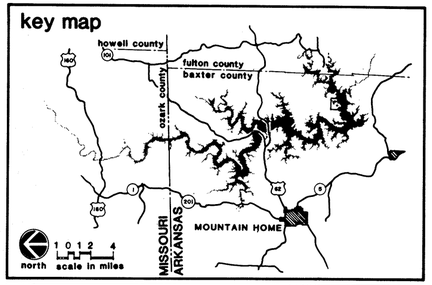
Five Year Initial Development

I.1 Maintain park as secondary lake access point.
Provide gravel parking area adjacent to launch ramp.
Remove concrete tables and well canopy.

Future Development

None Proposed

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5 — Not Indicated
Existing Vegetation
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north
200 0 100 200 400 800
scale in feet

master plan for Norfork Lake

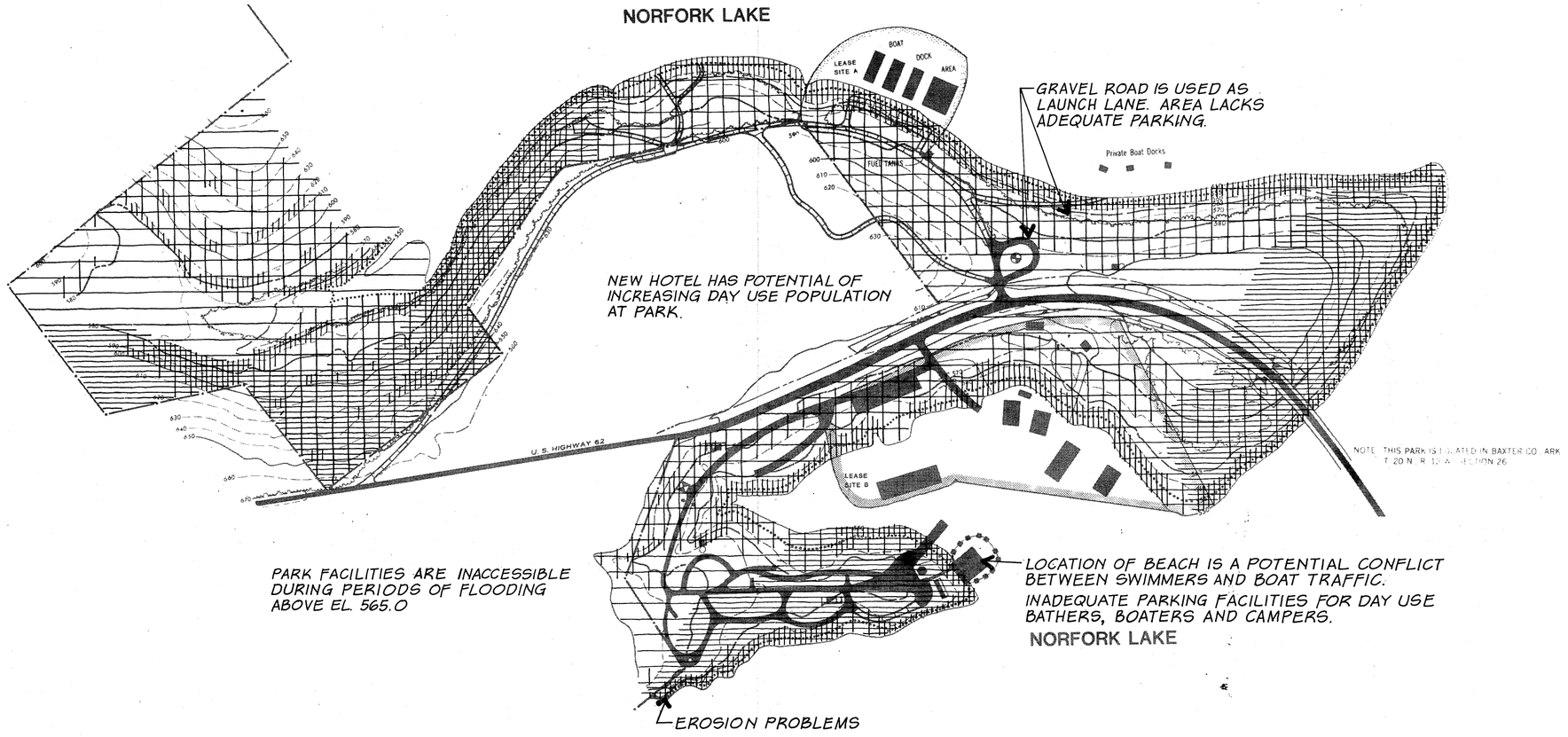
white river watershed
north fork river, arkansas and missouri

HAND PARK DEVELOPMENT PLAN

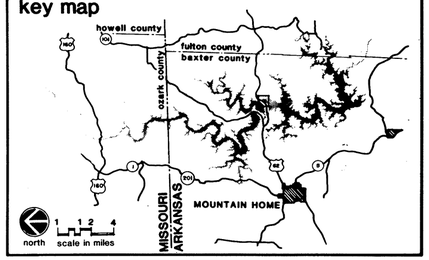
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

PLATE 6-10B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation
- Park Boundaries

Not Indicated

Not Indicated

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

HENDERSON PARK COMPOSITE ANALYSIS MAP

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri

November 1987

PLATE 6-11A

Existing Facilities

Area A
- Trailer Sanitary Station

Area B
- 38 Class B Camp Units w/ Electric
- 2 Vault Toilets
- 1-6 Unit Picnic Shelter
- Swimming Beach
- Minor Entrance Station
- 1-2 Lane Launch Ramp
- Marina

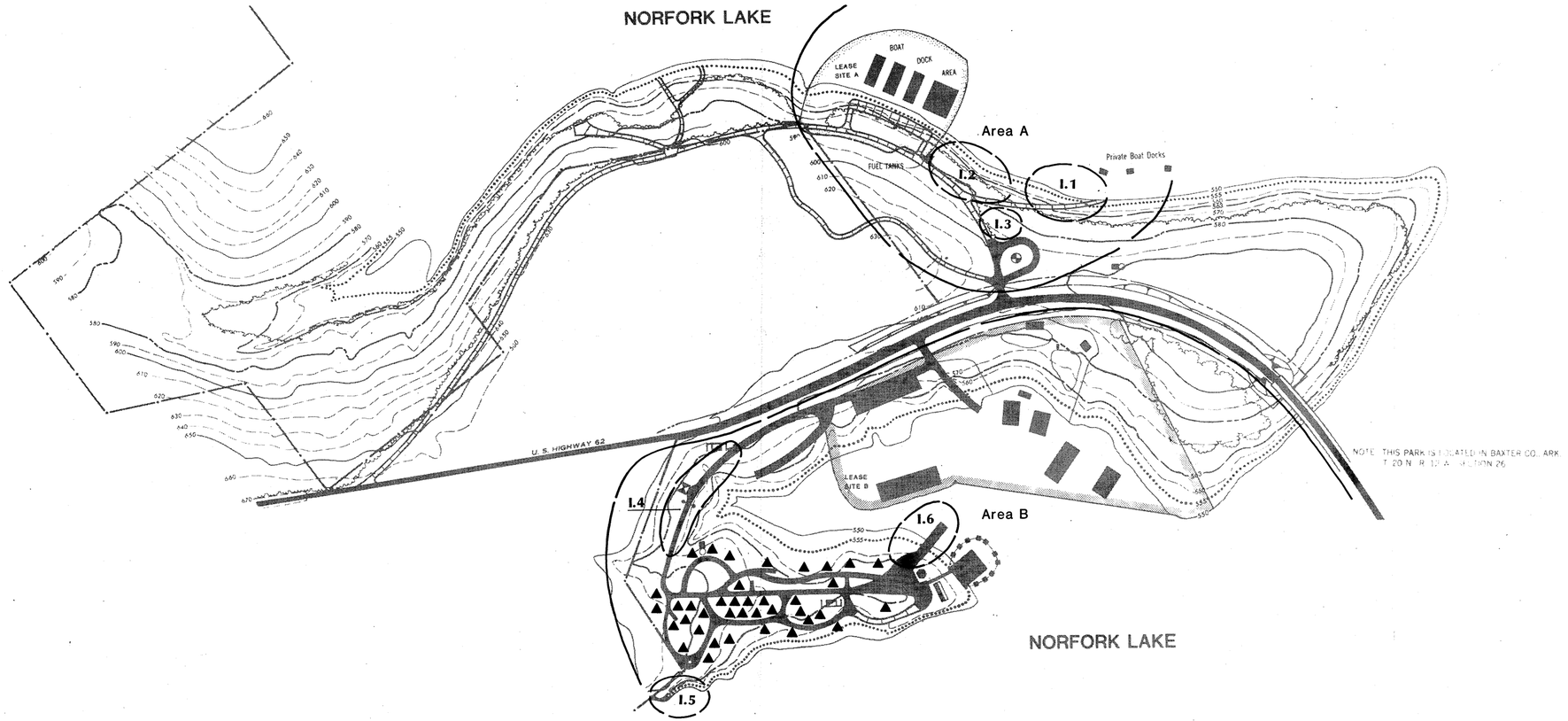
Five Year Initial Development

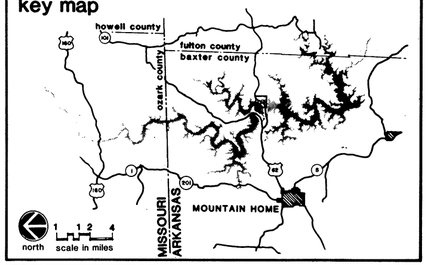
Area A
I.1 Provide 1-2 lane launch ramp
I.2 Provide paved parking area for 20 cars w/ trailers
I.3 Provide vault toilet facilities.

Area B
I.4 Raise access road to el. 565.0
I.5 Stabilize bank to prevent further erosion.
I.6 Abandon and demolish launch ramp upon completion of new launch lane in Area A.

Future Development

None proposed





legend

Existing Conditions

Natural Features
- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads
- Paved
- Gravel

Recreational Facilities
- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Five Year Initial Development
- Proposed Improvements — I.1
- Roads
- Trails
- Existing Camp Units to Remain
- Existing Camp Units to be Restored
- Existing Camp Units to be Removed

Future Development
- Proposed Improvements — F.1
- Roads
- Trails

north — scale in feet: 200 0 100 200 400 800

master plan for
Norfork Lake
white river watershed
north fork river, arkansas and missouri

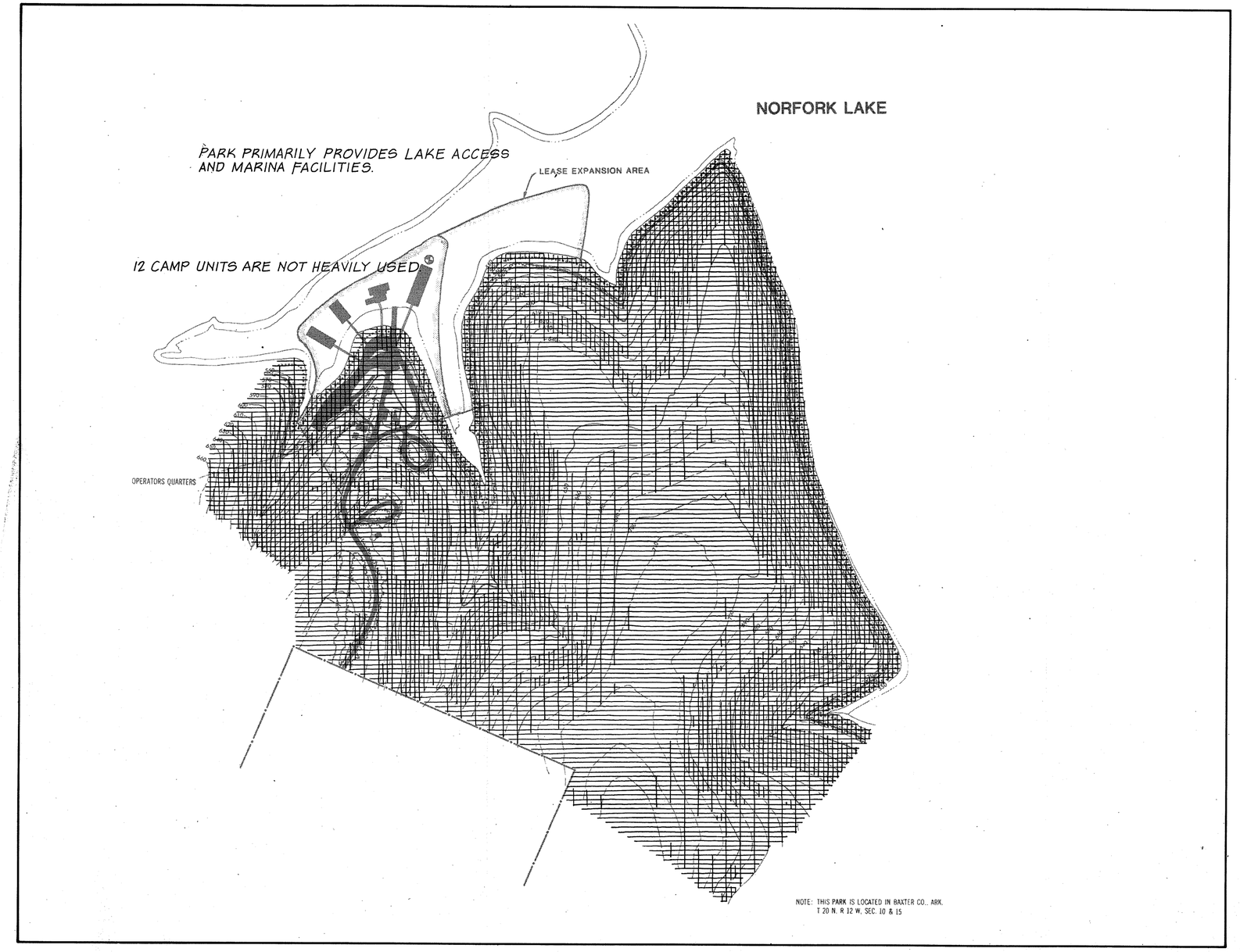
HENDERSON PARK DEVELOPMENT PLAN

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

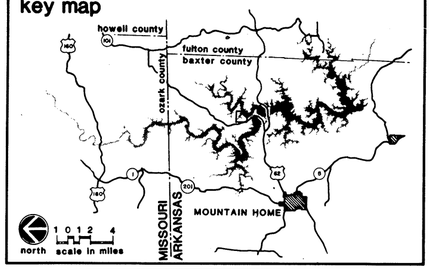
prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri

November 1987

PLATE 6-11B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation
- Park Boundaries

Not Indicated

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

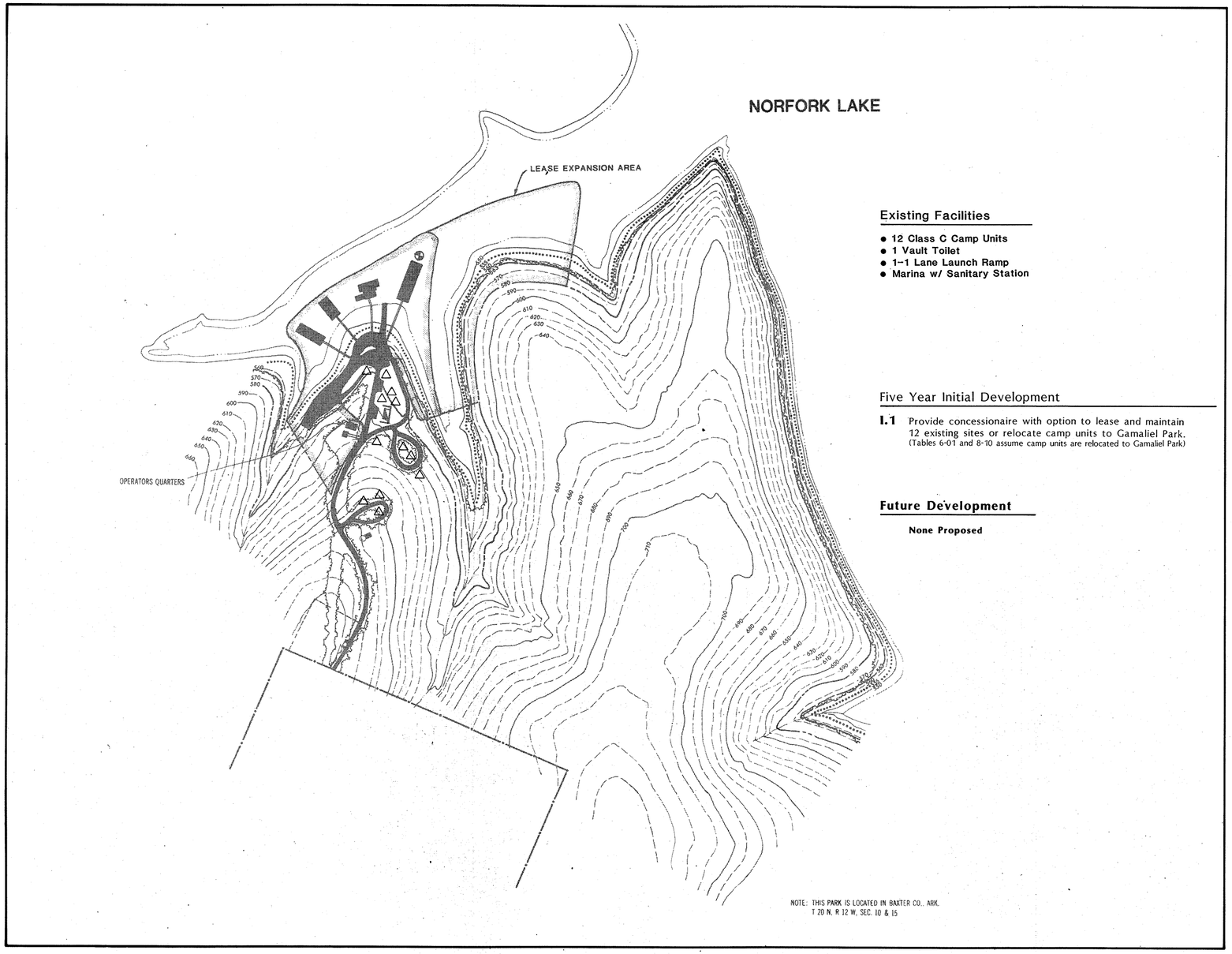
HOWARD COVE PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-12A



Existing Facilities

- 12 Class C Camp Units
- 1 Vault Toilet
- 1–1 Lane Launch Ramp
- Marina w/ Sanitary Station

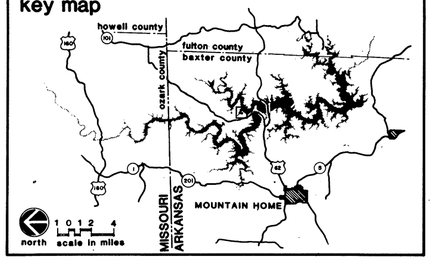
Five Year Initial Development

I.1 Provide concessionaire with option to lease and maintain 12 existing sites or relocate camp units to Gamaliel Park.
(Tables 6-01 and 8-10 assume camp units are relocated to Gamaliel Park)

Future Development

None Proposed

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

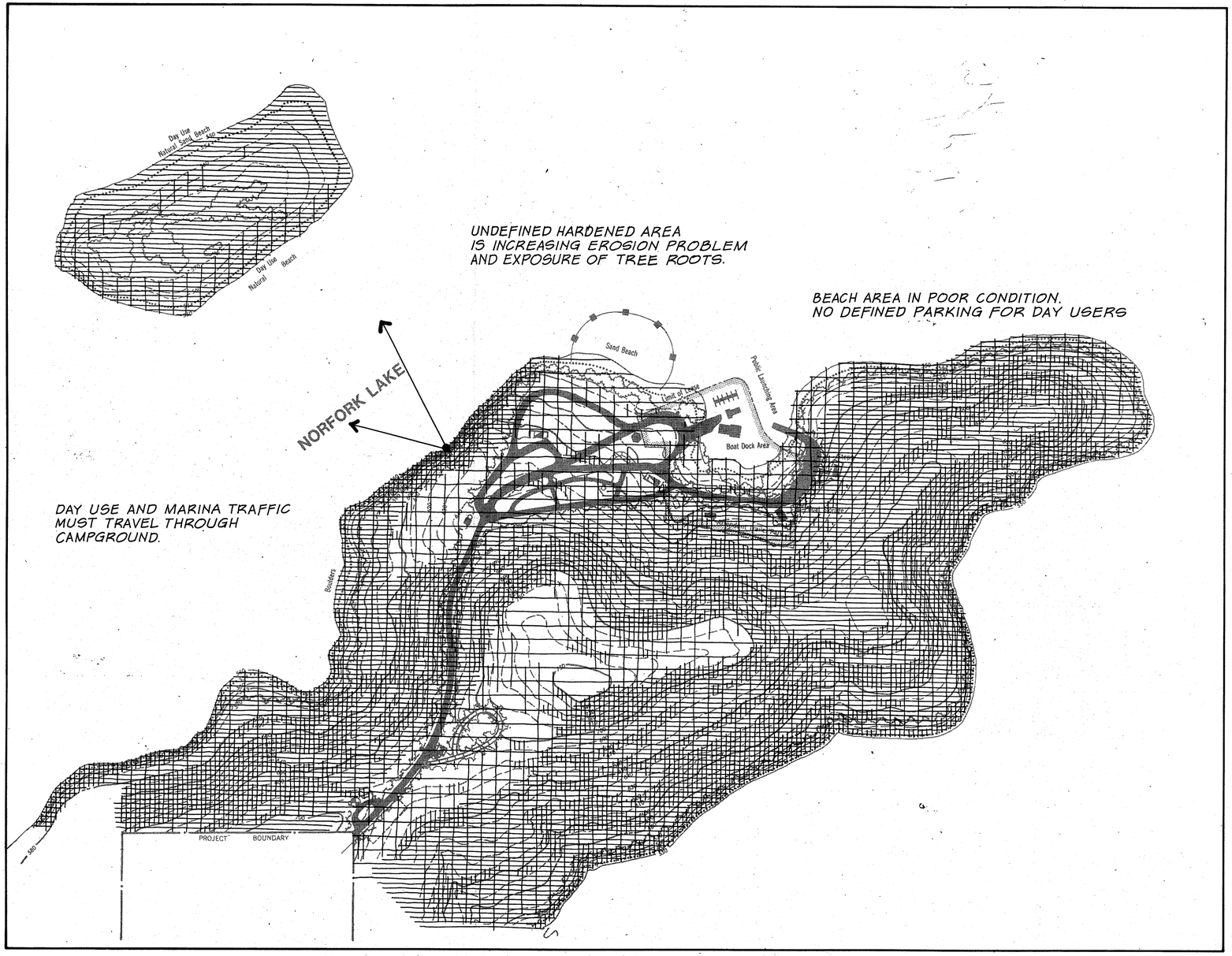
white river watershed
north fork river, arkansas and missouri

HOWARD COVE PARK DEVELOPMENT PLAN

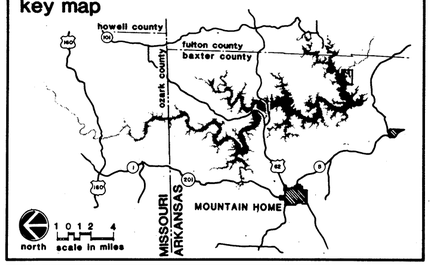
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

PLATE 6-12B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

JORDAN PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

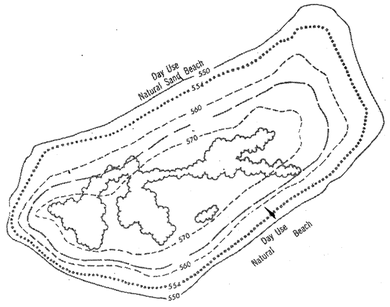
prepared by HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-13A

Existing Facilities

- 31 Class B Camp Units
- 7 Primitive Tent Units
- 1-6 Unit Picnic Shelter
- 3 Vault Toilets
- Swimming Beach
- Marina
- 1-2 Lane Launch Ramp
- Minor Entrance Station
- Trailer Sanitary Station

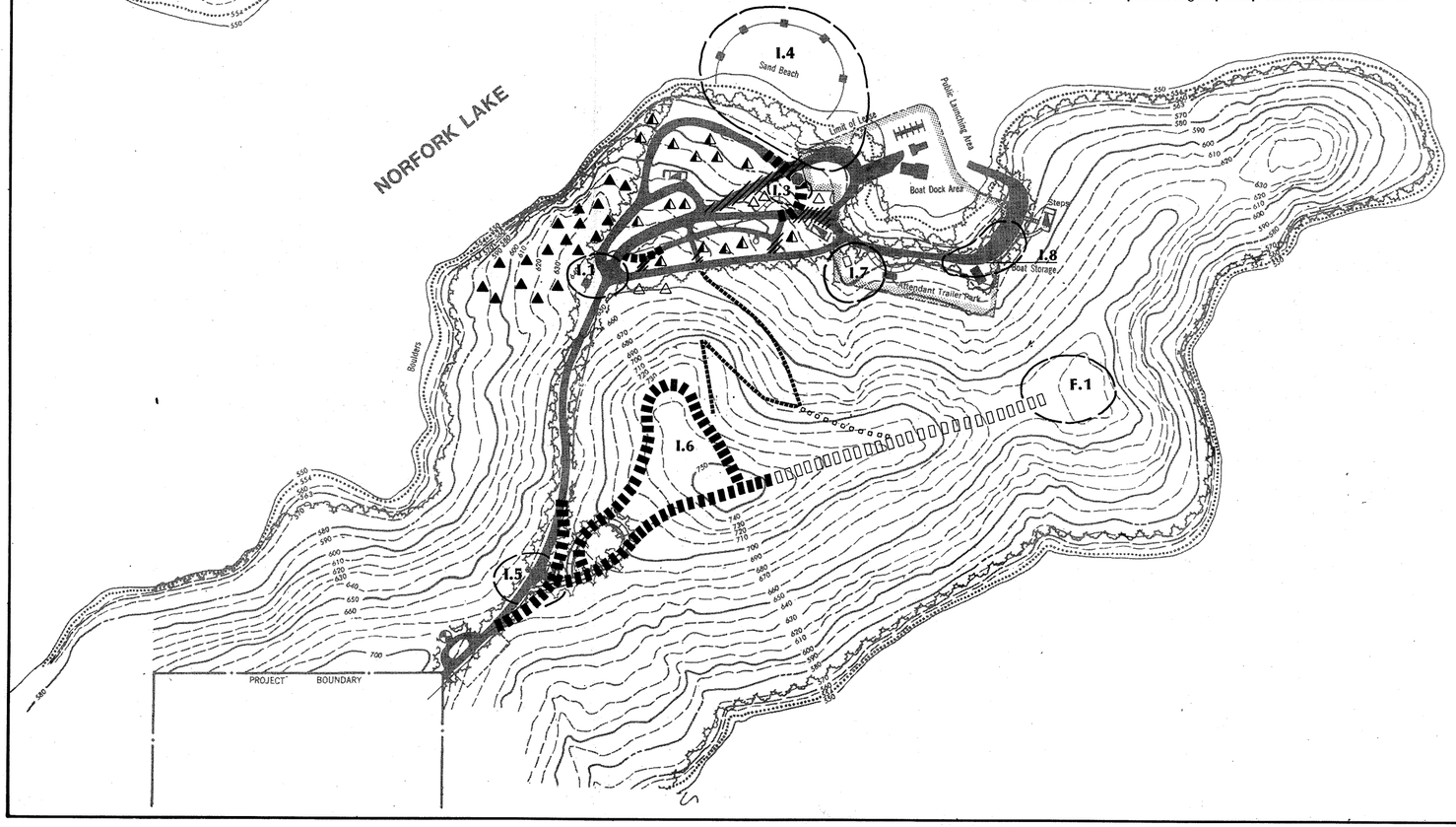


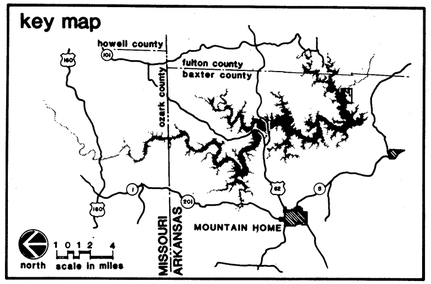
Five Year Initial Development

I.1 Separate and define camping activities from marina and day use areas. Obliterate and landscape vacated roads. (////)
I.2 Relocate 5 camp units, Restore 17 camp units (see symbol's △◭).
I.3 Relocate existing picnic shelter to Panther Bay Park.
I.4 Expand day use facilities -
Provide additional parking.
Provide 5 picnic units for day-users.
Upgrade beach.
I.5 Provide a major entrance station.
I.6 Provide 19 Class B+ camp units (5 relocated, 7 from Panther Bay, 7 new).
I.7 Provide shower facilities to upgrade park to B+.
I.8 Expand and stripe boat launching parking area.

Future Development

F.1 **Provide 12 primitive/group camp units with controlled access.**





legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements I.1
Roads
Trails
Existing Camp Units to Remain ▲
Existing Camp Units to be Restored ◭
Existing Camp Units to be Removed △

Future Development

Proposed Improvements F.1
Roads
Trails

north
200 0 100 200 400 800
scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

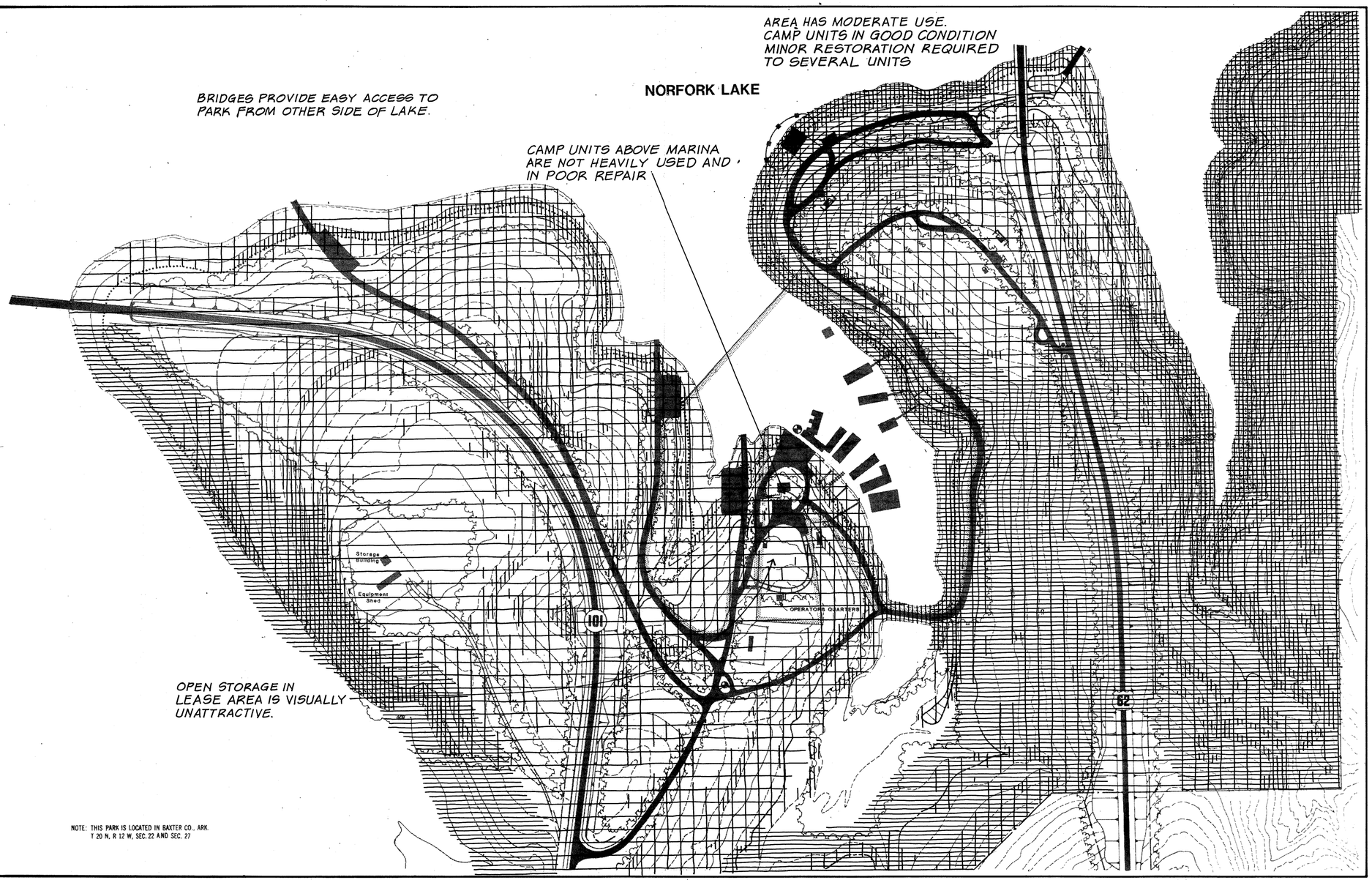
JORDAN PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

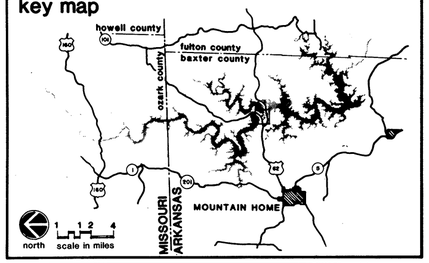
November 1987

PLATE 6-12B



NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 20 N, R 12 W, SEC. 22 AND SEC. 27

key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north — scale in feet: 200 0 100 200 400 800

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

PANTHER BAY PARK
COMPOSITE ANALYSIS MAP

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987

PLATE 6-14A

Five Year Initial Development

I.1 Provide a major day use area–
- Relocate picnic shelter from Jordan Park to area above el. 570.0
- Provide 2-6 unit picnic shelters.
- Provide 8 day use picnic tables.
- Provide a change house w/ vault toilet and showers. Locate above el. 580.0.
- Provide a major swimming beach.
- Provide playground facilities.

I.2 Relocate 7 camp units above marina to Jordan Park.

I.3 Close launch ramp and expand parking.

I.4 Secure camping area during off peak use periods.

I.5 Restore 7 camp units (see symbol ◭).

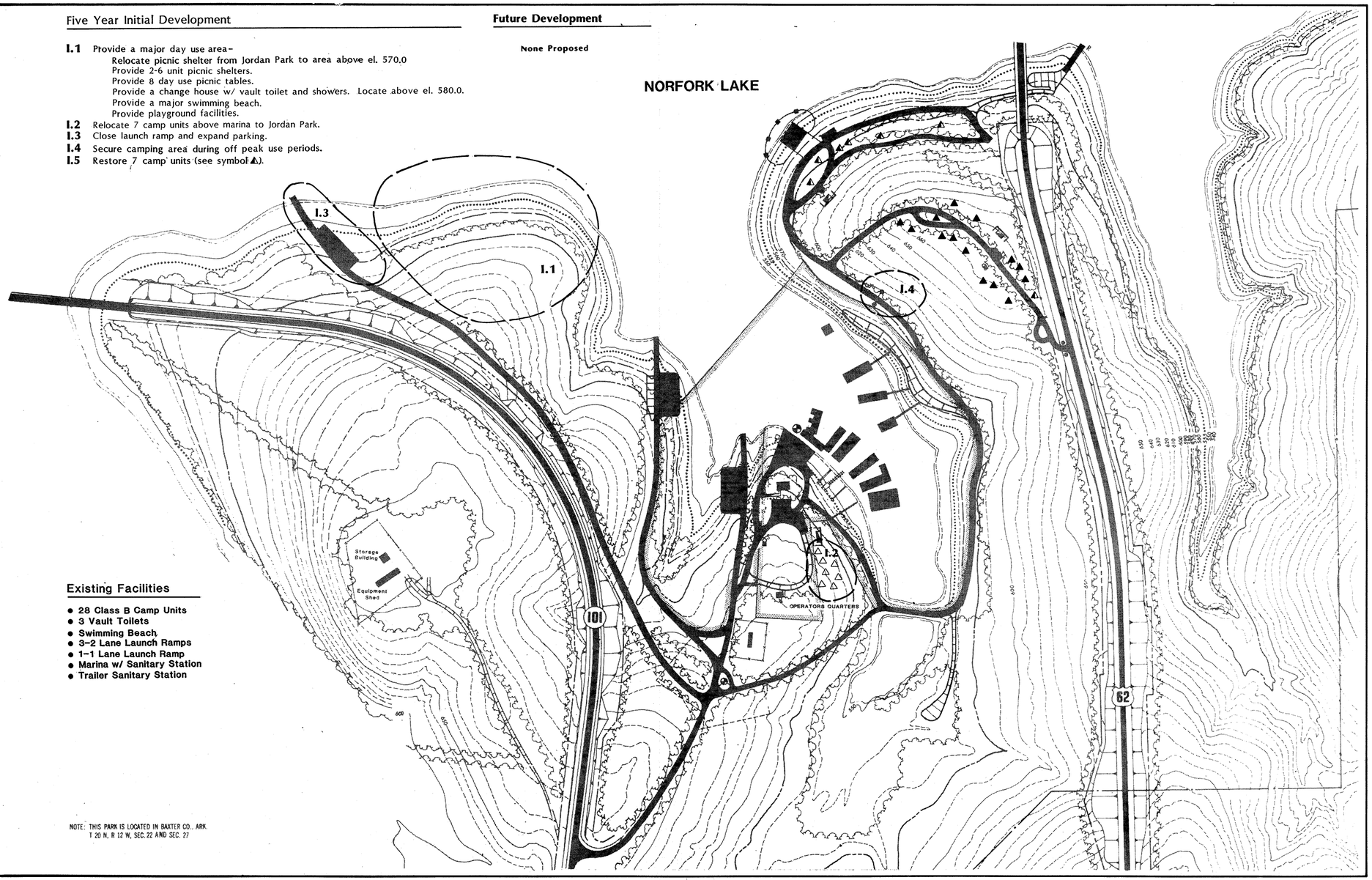
Future Development

None Proposed

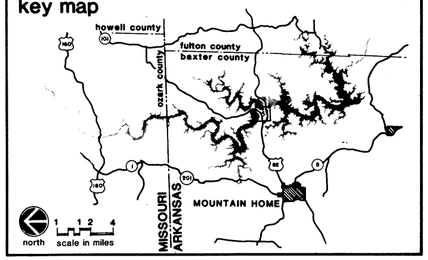
Existing Facilities

- 28 Class B Camp Units
- 3 Vault Toilets
- Swimming Beach
- 3–2 Lane Launch Ramps
- 1–1 Lane Launch Ramp
- Marina w/ Sanitary Station
- Trailer Sanitary Station

NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK. T 20 N, R 12 W, SEC. 22 AND SEC. 27



key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved	
Gravel	

Recreational Facilities

Vault Toilet	
Restrooms– water borne	
Change House	
Entrance Station	
Picnic Shelter	
Gate	
Trail	
Swimming Beach	
Well	
Marina/ Trailer Sanitary Station	
Playground	

Five Year Initial Development

Proposed Improvements	I.1
Roads	
Trails	
Existing Camp Units to Remain	▲
Existing Camp Units to be Restored	◭
Existing Camp Units to be Removed	△

Future Development

Proposed Improvements	F.1
Roads	
Trails	

200 0 100 200 400 800

north scale in feet

master plan for Norfork Lake

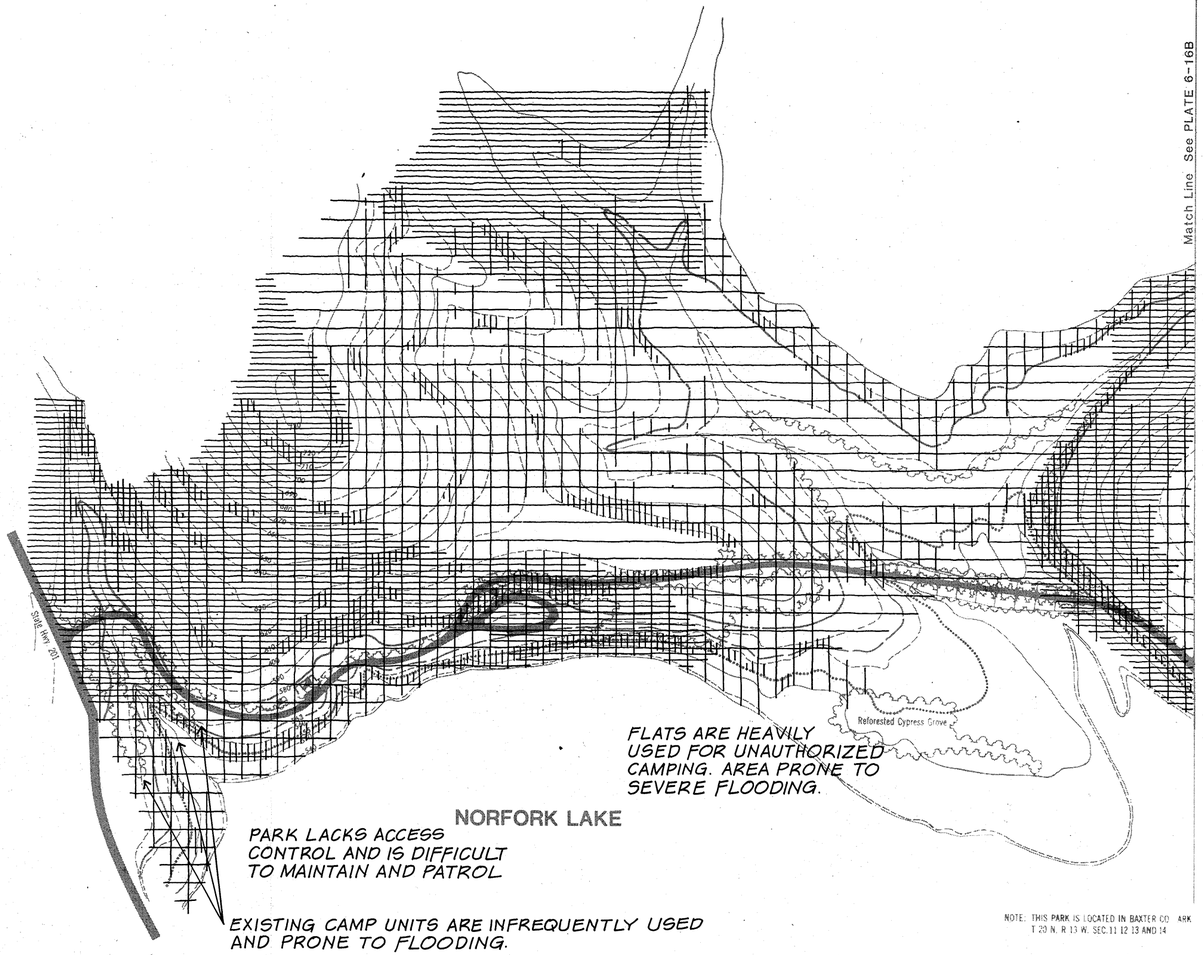
white river watershed
north fork river, arkansas and missouri

PANTHER BAY PARK DEVELOPMENT PLAN

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

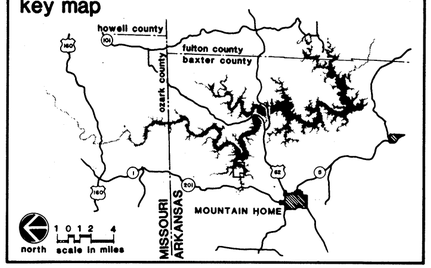
prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987

PLATE 6-14B





key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

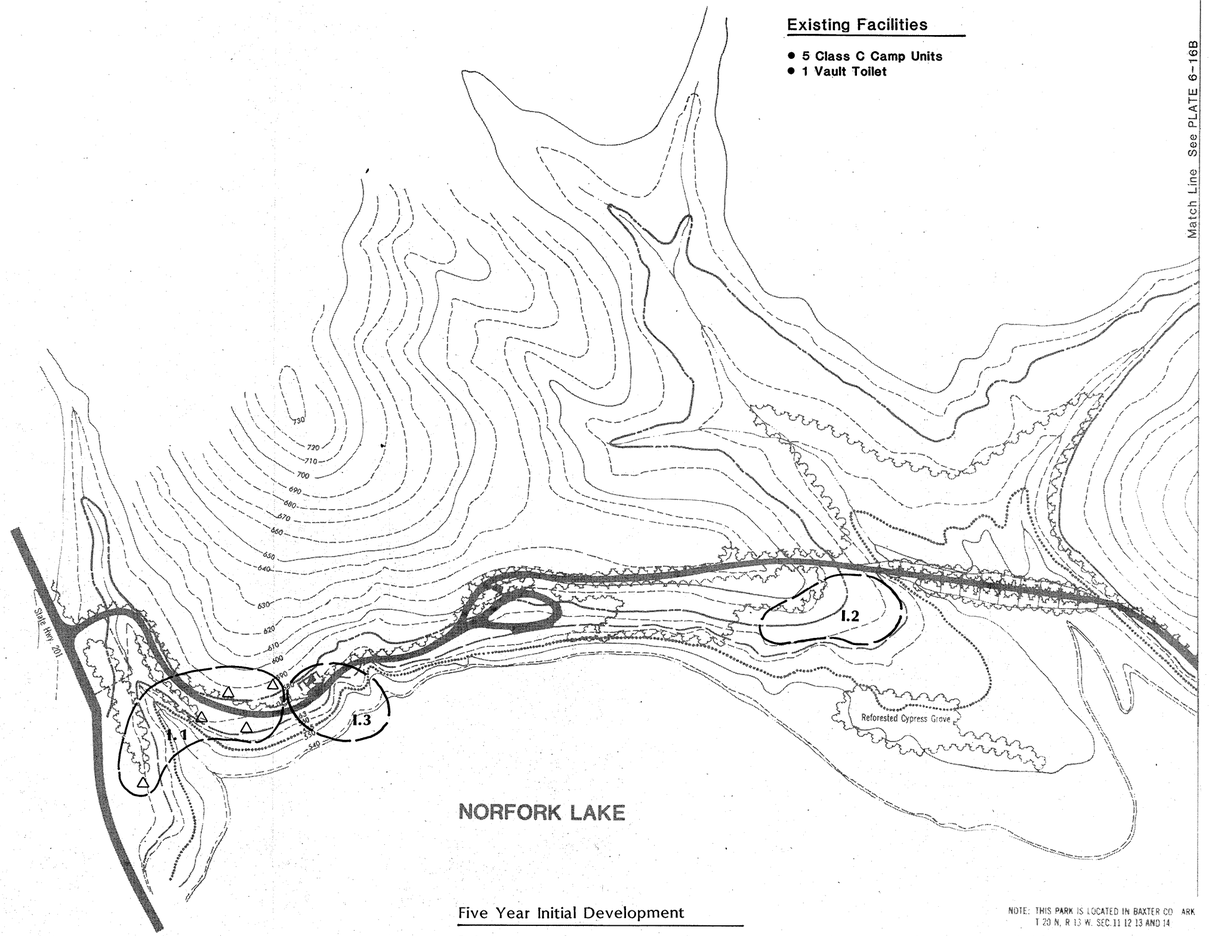
PIGEON CREEK PARK COMPOSITE ANALYSIS MAP

Sheet 1 of 2

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

PLATE 6-15A



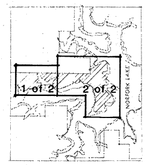
Five Year Initial Development

I.1 Relocate existing camp units to east end of park and convert to day use (see symbol△)
I.2 Control vehicular access to cypress grove with barricade and designate parking area.
I.3 Remove vault toilet facilities.

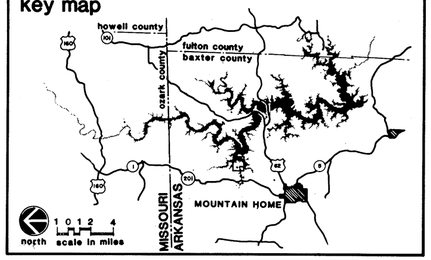
Future Development

None Proposed

NOTE: THIS PARK IS LOCATED IN BAXTER CO ARK T 20 N, R 13 W, SEC 11 12 13 AND 14



key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain ▲
Existing Camp Units to be Restored ▲
Existing Camp Units to be Removed △

Future Development

Proposed Improvements — F.1
Roads
Trails

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

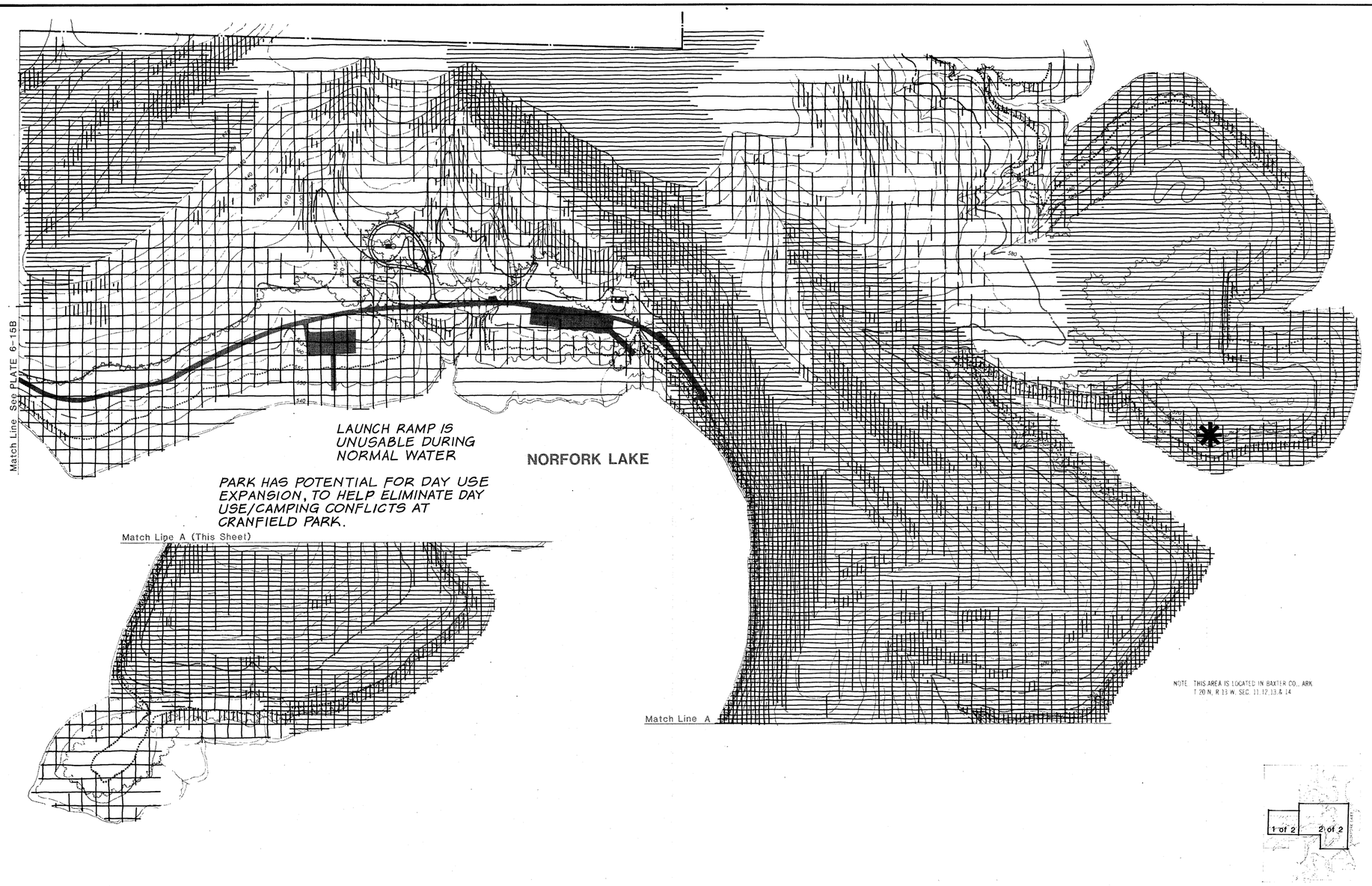
PIGEON CREEK PARK DEVELOPMENT PLAN

Sheet 1 of 2

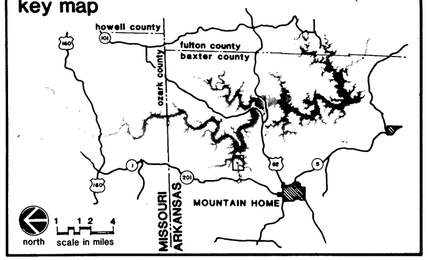
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987



key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Development Constraints and Opportunities

Unique Vegetation / Habitat
Scenic Views
Slopes Greater than 12%
Slopes Greater than 25%
Moderate Soil Limitations
Severe Soil Limitations

north — scale in feet: 200 0 100 200 400 800

master plan for Norfork Lake

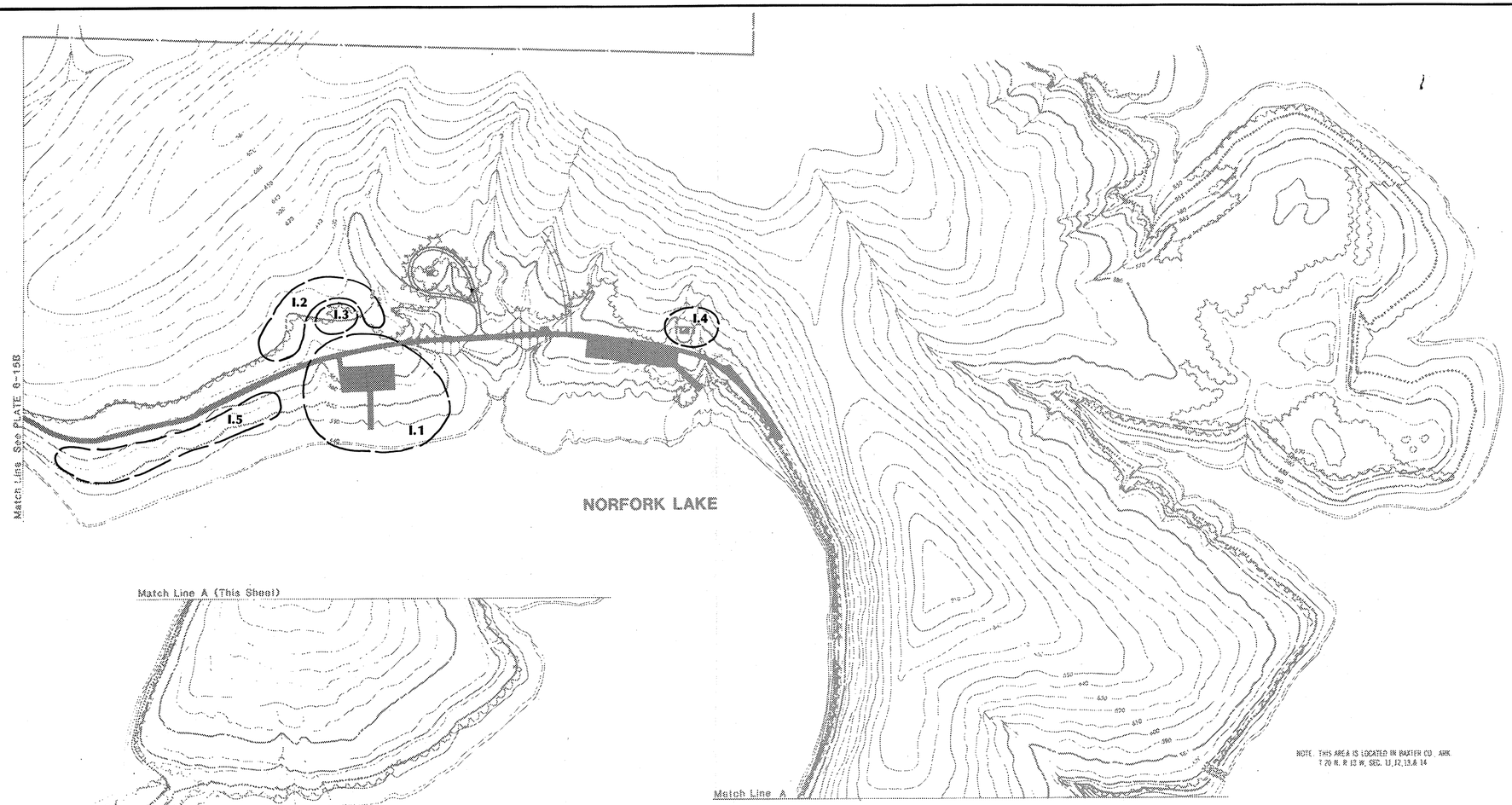
white river watershed
north fork river, arkansas and missouri

PIGEON CREEK PARK COMPOSITE ANALYSIS MAP

Sheet 2 of 2

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987



Existing Facilities

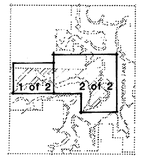
- Vault Toilet
- 1-1 Lane Launch Ramp

Five Year Initial Development

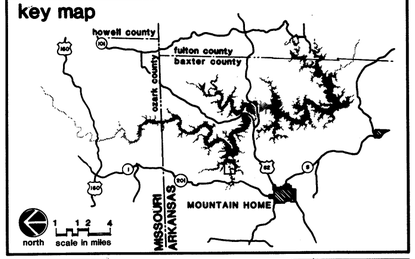
I.1 Convert unusable launch ramp area to day use beach and provide parking on north side of road.
I.2 Relocate 5 existing camp units from west end to area above beach and convert to day use. Provide 1-6 unit picnic shelter and 4 picnic units for day use.
I.3 Install vault toilet
I.4 Provide pedestrian access from road to existing vault toilet.
I.5 Provide cypress and sycamore plantings for tree cover.

Future Development

None Proposed



key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5
Existing Vegetation — Not Indicated
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north — 200 0 100 200 400 800 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

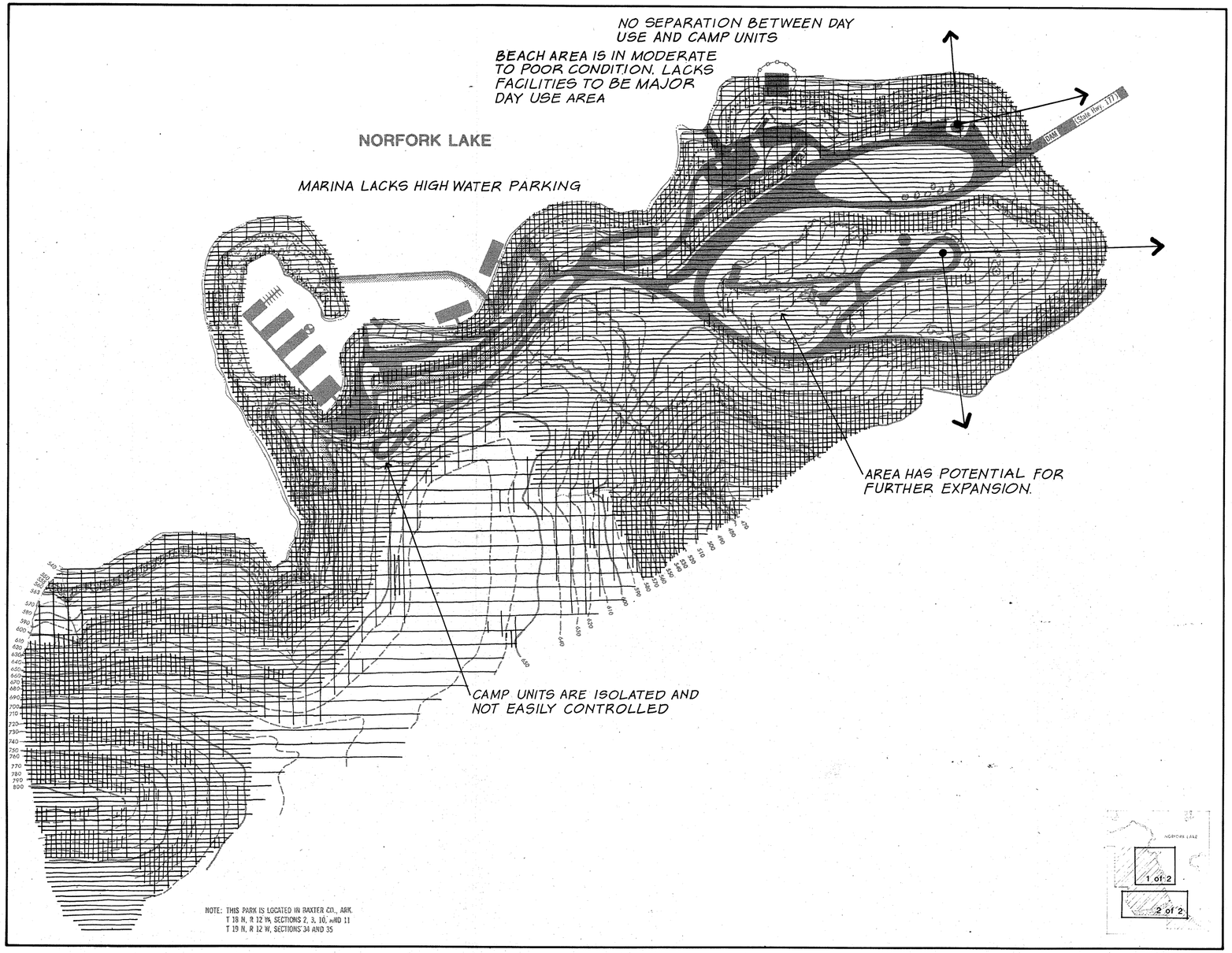
PIGEON CREEK PARK DEVELOPMENT PLAN

Sheet 2 of 2

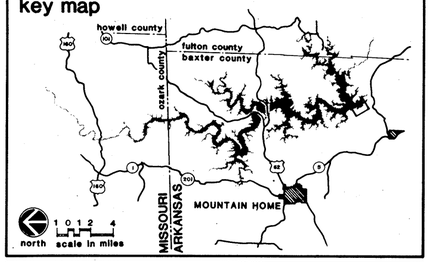
U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987

PLATE 6-16B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north — scale in feet: 200 0 100 200 400 800

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

QUARRY COVE and DAM COMPOSITE ANALYSIS MAP

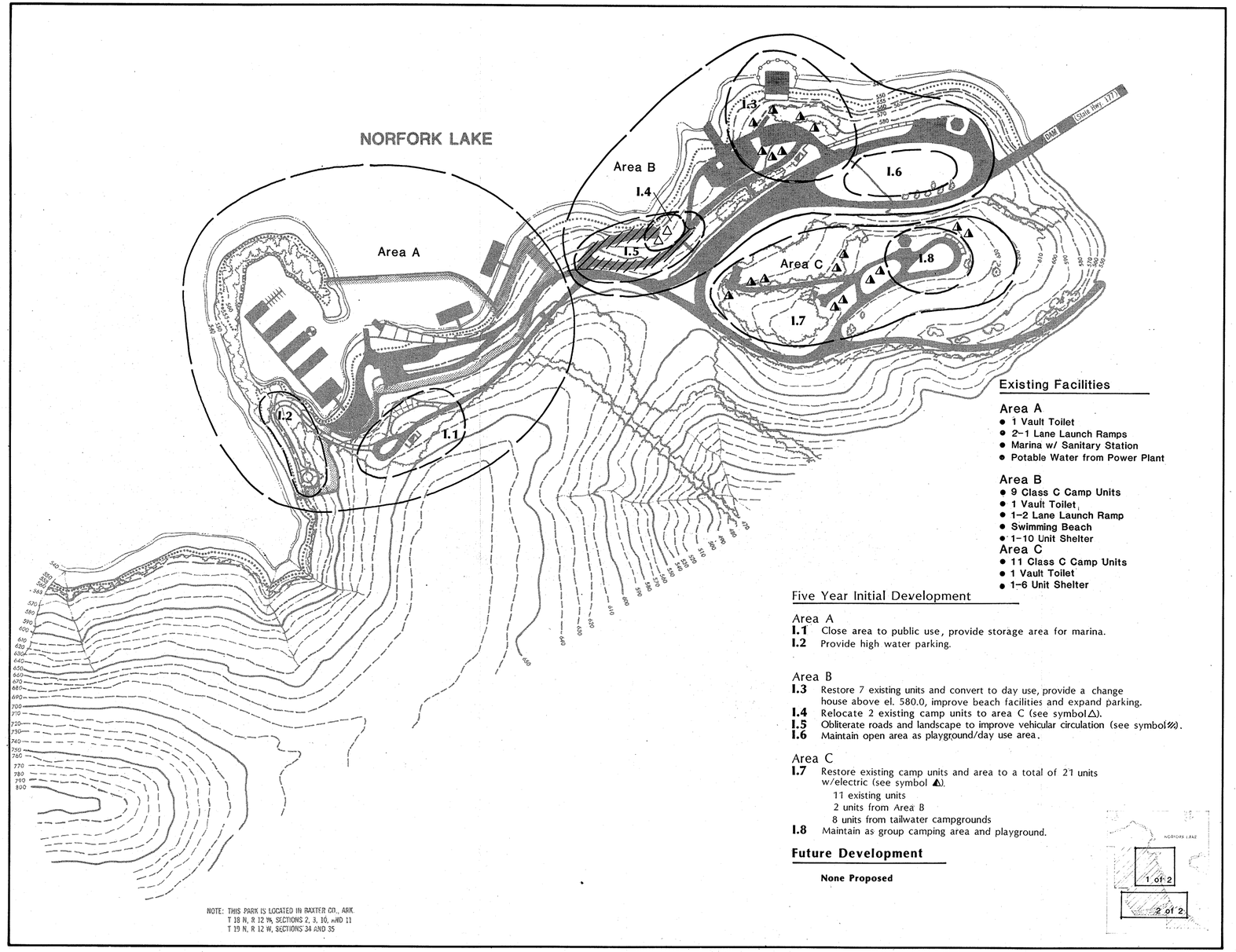
Sheet 1 of 2

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-17A



NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 18 N, R 12 W, SECTIONS 2, 3, 10, AND 11
T 19 N, R 12 W, SECTIONS 34 AND 35

Existing Facilities

Area A
- 1 Vault Toilet
- 2–1 Lane Launch Ramps
- Marina w/ Sanitary Station
- Potable Water from Power Plant

Area B
- 9 Class C Camp Units
- 1 Vault Toilet
- 1–2 Lane Launch Ramp
- Swimming Beach
- 1–10 Unit Shelter

Area C
- 11 Class C Camp Units
- 1 Vault Toilet
- 1–6 Unit Shelter

Five Year Initial Development

Area A

I.1 Close area to public use, provide storage area for marina.

I.2 Provide high water parking.

Area B

I.3 Restore 7 existing units and convert to day use, provide a change house above el. 580.0, improve beach facilities and expand parking.

I.4 Relocate 2 existing camp units to area C (see symbol △).

I.5 Obliterate roads and landscape to improve vehicular circulation (see symbol ▨).

I.6 Maintain open area as playground/day use area.

Area C

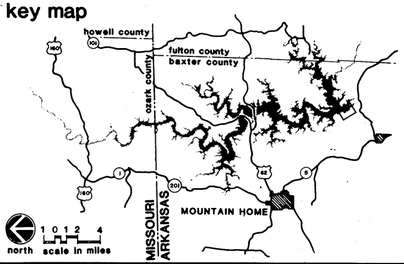
I.7 Restore existing camp units and area to a total of 21 units w/electric (see symbol ▲).
- 11 existing units
- 2 units from Area B
- 8 units from tailwater campgrounds

I.8 Maintain as group camping area and playground.

Future Development

None Proposed

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5 — Not Indicated
Existing Vegetation
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north — scale in feet: 200 0 100 200 400 800

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

QUARRY COVE and DAM DEVELOPMENT PLAN

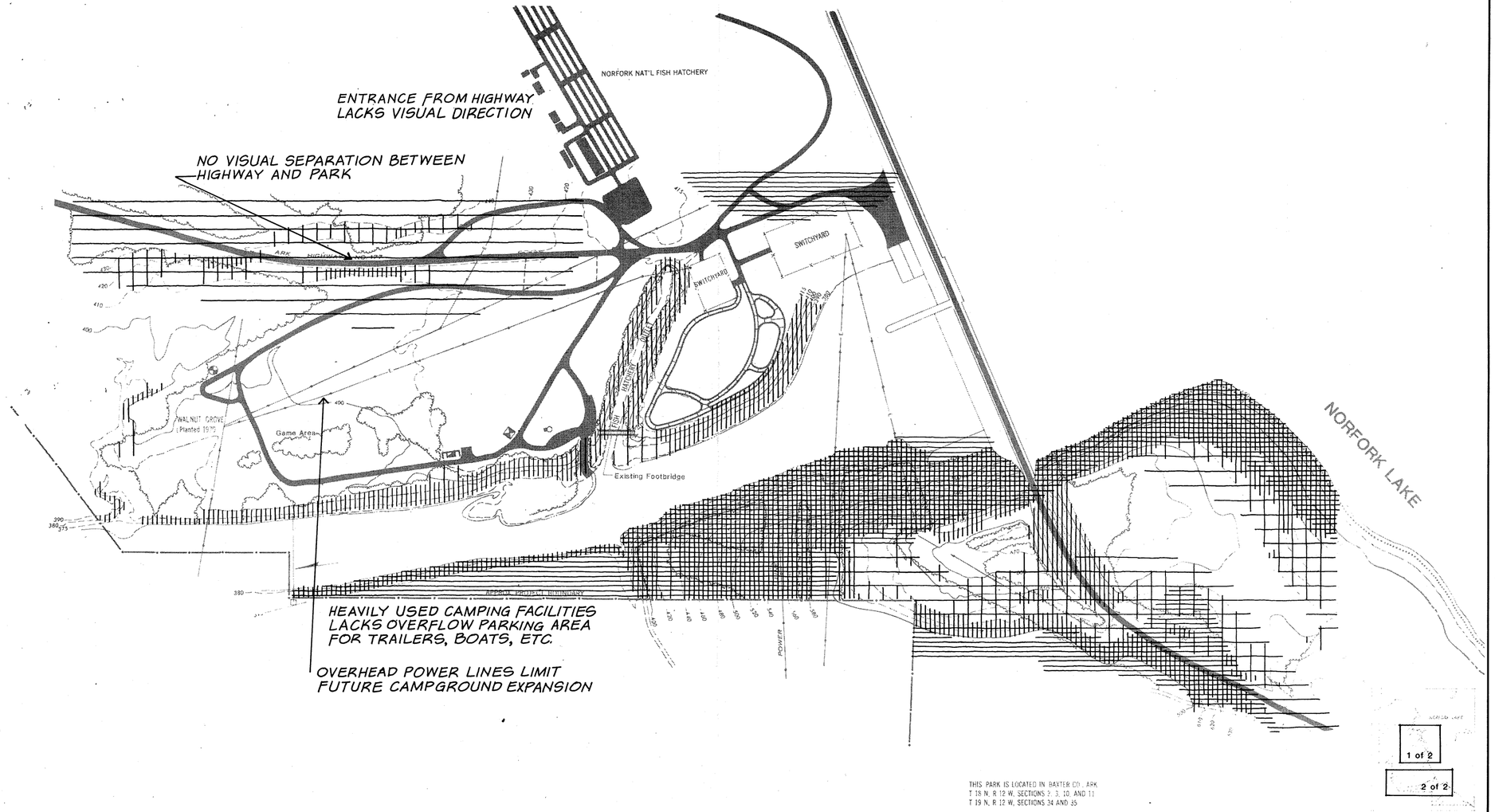
Sheet 1 of 2

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-17B

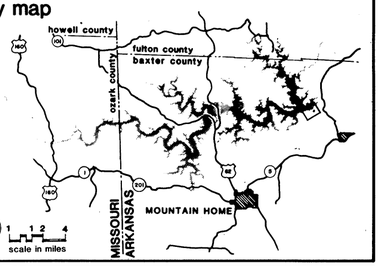


THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 18 N, R 12 W, SECTIONS 2, 3, 10, AND 11
T 19 N, R 12 W, SECTIONS 34 AND 35

1 of 2

2 of 2

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Development Constraints and Opportunities

Unique Vegetation / Habitat
Scenic Views
Slopes Greater than 12%
Slopes Greater than 25%
Moderate Soil Limitations
Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

QUARRY COVE and DAM COMPOSITE ANALYSIS MAP

Sheet 2 of 2

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987

PLATE 6-18A

Existing Facilities

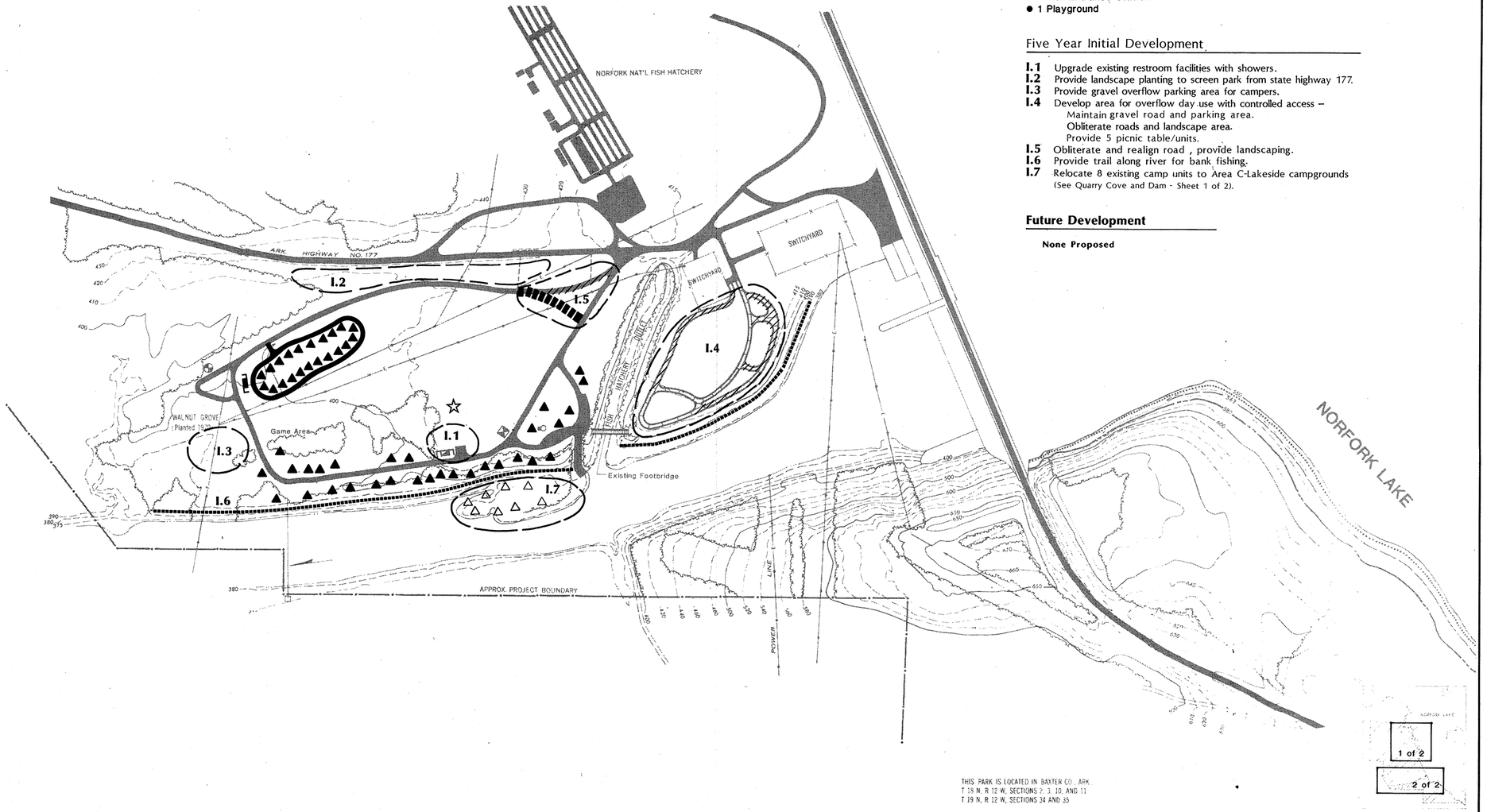
- 51 Class A Camp Units w/ Electric
- 3 Picnic Units
- 1 Vault Toilet
- 1 Water Borne Toilet w/ Showers
- Trailer Sanitary Station
- 1-1 Lane Launch Ramp
- Minor Entrance Station
- 1 Playground

Five Year Initial Development

I.1 Upgrade existing restroom facilities with showers.
I.2 Provide landscape planting to screen park from state highway 177.
I.3 Provide gravel overflow parking area for campers.
I.4 Develop area for overflow day use with controlled access –
Maintain gravel road and parking area.
Obliterate roads and landscape area.
Provide 5 picnic table/units.
I.5 Obliterate and realign road , provide landscaping.
I.6 Provide trail along river for bank fishing.
I.7 Relocate 8 existing camp units to Area C-Lakeside campgrounds
(See Quarry Cove and Dam - Sheet 1 of 2).

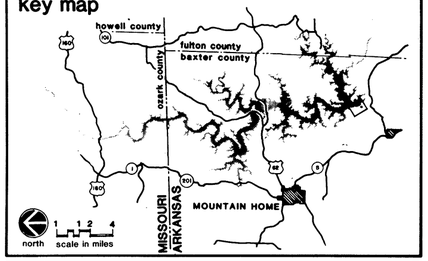
Future Development

None Proposed



THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 18 N, R 12 W, SECTIONS 2, 3, 10, AND 11
T 19 N, R 12 W, SECTIONS 34 AND 35

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved	
Gravel	

Recreational Facilities

Vault Toilet	
Restrooms- water borne	
Change House	
Entrance Station	
Picnic Shelter	
Gate	
Trail	
Swimming Beach	
Well	
Marina/ Trailer Sanitary Station	
Playground	

Five Year Initial Development

Proposed Improvements	I.1
Roads	
Trails	
Existing Camp Units to Remain	
Existing Camp Units to be Restored	
Existing Camp Units to be Removed	

Future Development

Proposed Improvements	F.1
Roads	
Trails	

north — scale in feet: 200 0 200 400 800

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

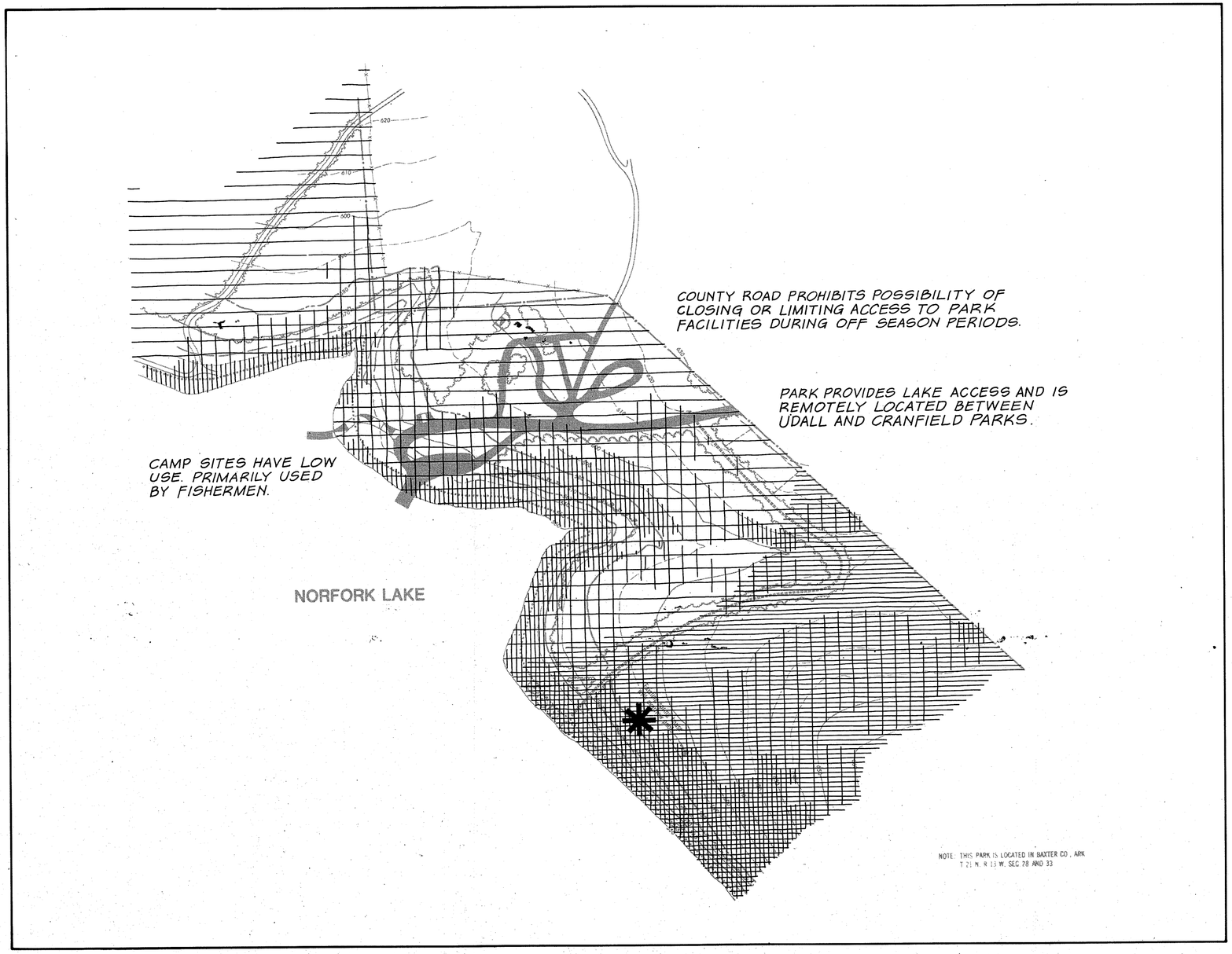
QUARRY COVE and DAM DEVELOPMENT PLAN

Sheet 2 of 2

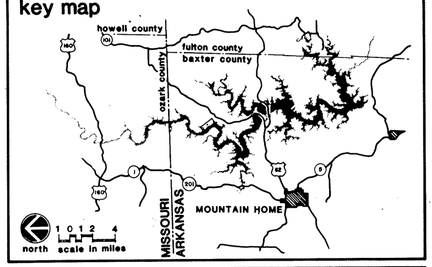
U. S. Army Engineer District, Little Rock Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. St. Louis, Missouri
November 1987

PLATE 6-18B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

100 0 100 200 400

scale in feet

master plan for Norfork Lake

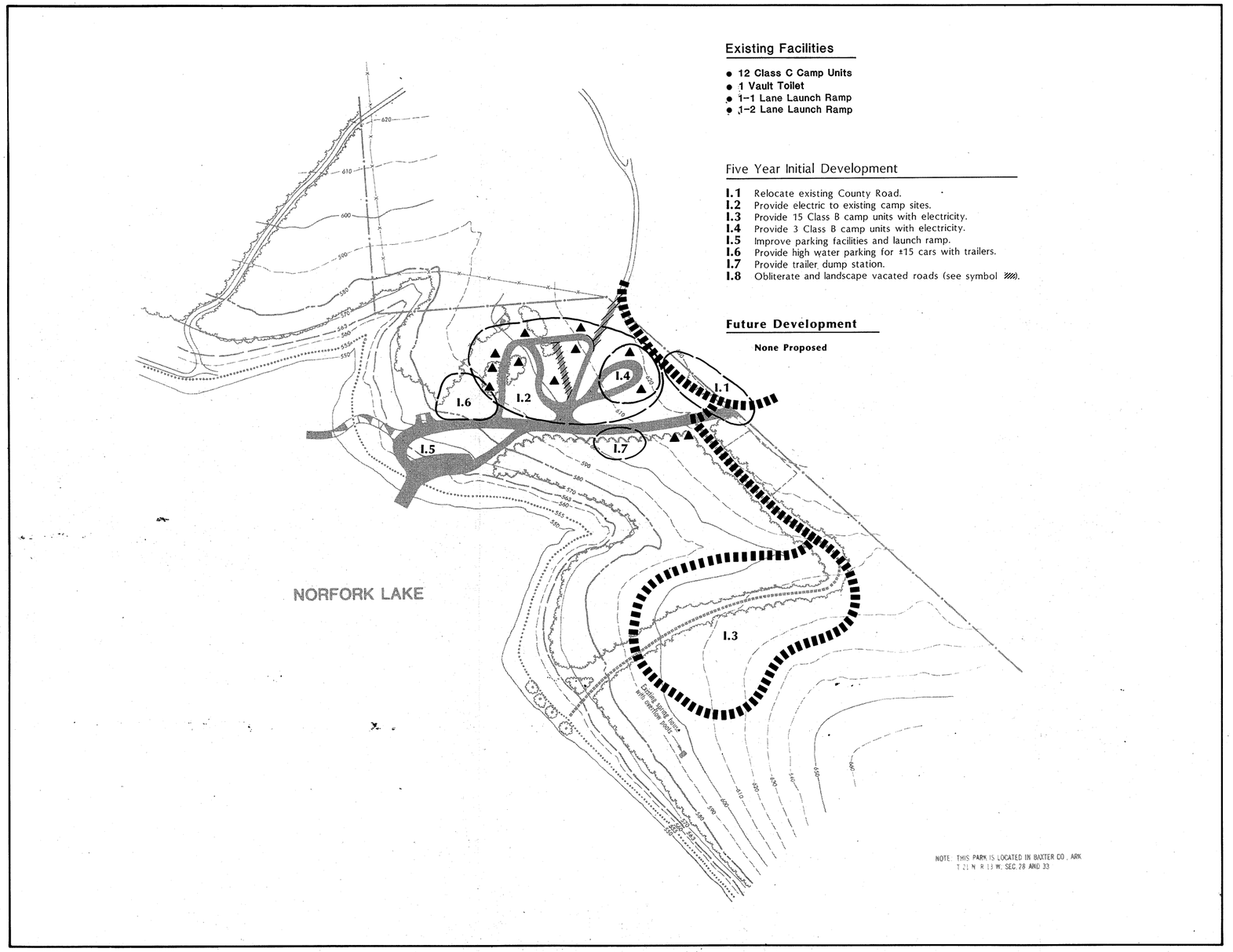
white river watershed
north fork river, arkansas and missouri

RED BANK PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987



Existing Facilities

- 12 Class C Camp Units
- 1 Vault Toilet
- 1-1 Lane Launch Ramp
- 1-2 Lane Launch Ramp

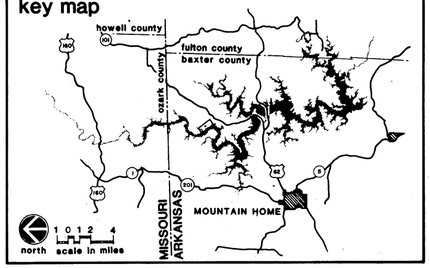
Five Year Initial Development

I.1 Relocate existing County Road.
I.2 Provide electric to existing camp sites.
I.3 Provide 15 Class B camp units with electricity.
I.4 Provide 3 Class B camp units with electricity.
I.5 Improve parking facilities and launch ramp.
I.6 Provide high water parking for ±15 cars with trailers.
I.7 Provide trailer dump station.
I.8 Obliterate and landscape vacated roads (see symbol ////).

Future Development

None Proposed

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5 — Not Indicated
Existing Vegetation
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

100 0 100 200 400
north — scale in feet

master plan for Norfork Lake

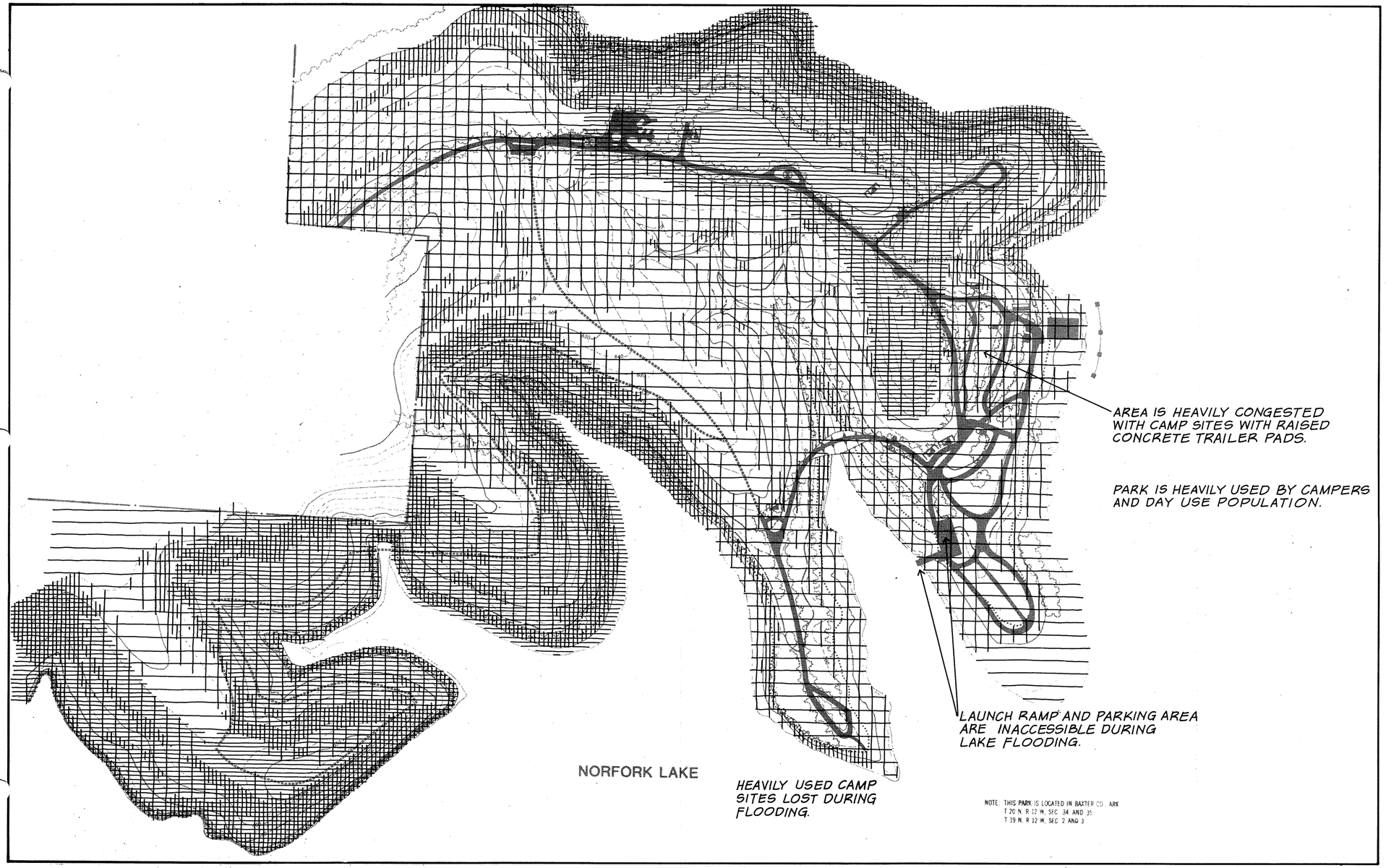
white river watershed
north fork river, arkansas and missouri

RED BANK PARK DEVELOPMENT PLAN

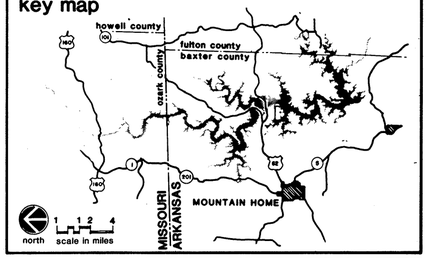
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

200 0 100 200 400 800

north scale in feet

master plan for Norfork Lake

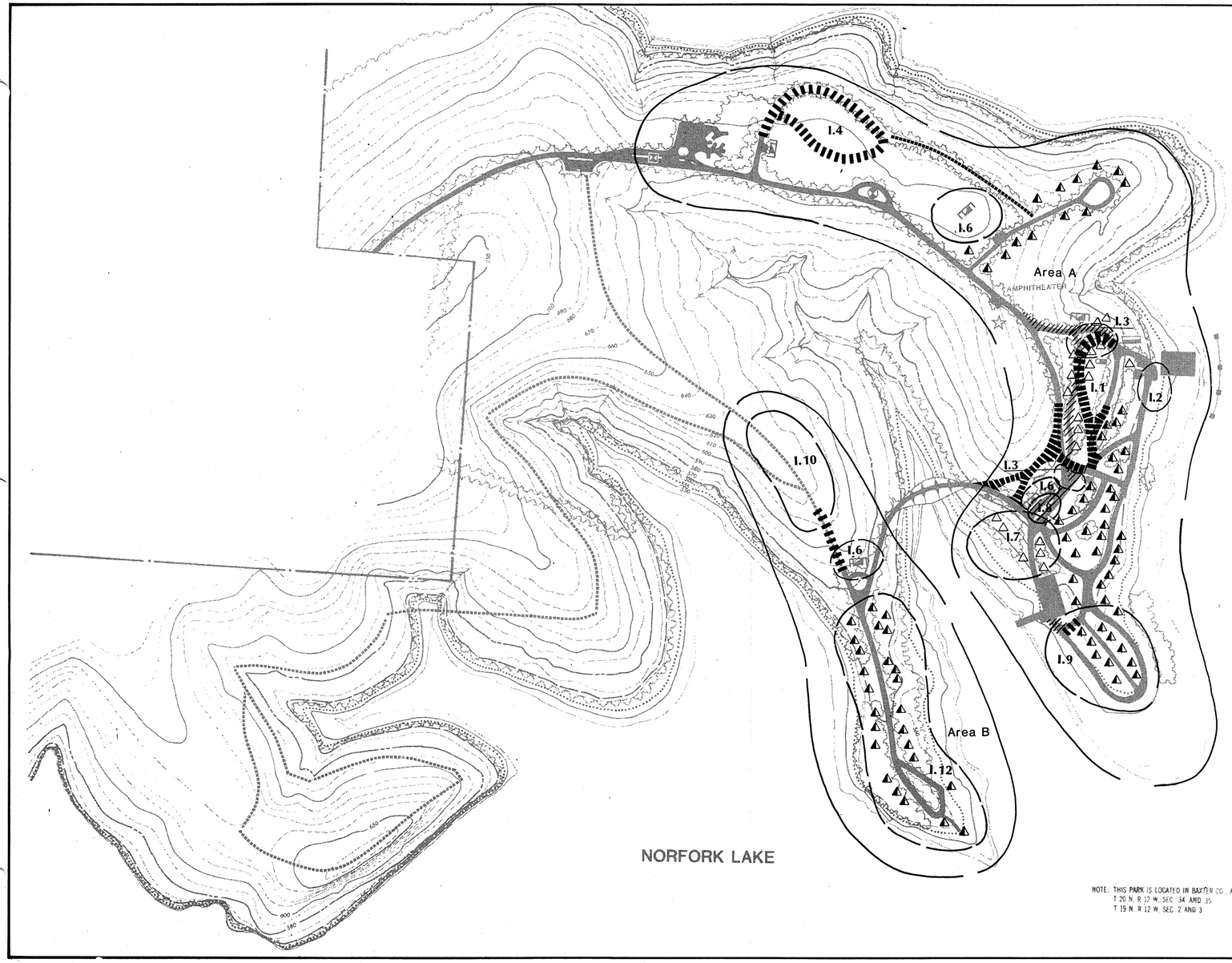
white river watershed
north fork river, arkansas and missouri

ROBINSON POINT PARK COMPOSITE ANALYSIS MAP

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987

PLATE 6-20A



Existing Facilities

Area A

- 73 Class B+ Camp Units w/ Electric
- 1-6 Unit Picnic Shelter
- 5 Vault Toilets
- 1 Change House w/ Showers
- 1-2 Lane Launch Ramp
- Major Entrance Station
- Swimming Beach
- Trailer Sanitary Station
- Amphitheater
- Playground

Area B

- 25 Class B+ Camp Units w/ Electric
- 1 Vault Toilet

Five Year Initial Development

Area A

I.1 Reduce camping congestion and improve auto circulation.
Relocate 13 existing camp units and realign road.
Obliterate and landscape vacated road and camp sites (see symbol's △ ▨).
Provide 8 new class B+ camp units along new road in camping area.

I.2 Expand beach parking.

I.3 Provide overflow parking for cars and trailers.

I.4 13 relocated class B+ camp units with controlled access.

I.5 Restore 54 camp units (see symbol ◭).

I.6 Provide shower facilities to existing vault toilets.

I.7 Provide 1-1 lane high water launch ramp and parking area.
Relocate 6 existing camp units to **I.10**

I.8 Provide parking area for restrooms.

I.9 Provide cypress and sycamore plantings for tree cover.

Area B

I.10 Provide 15 class B+ camp units with controlled access.
6 units relocated from new launch area.
9 new units.

I.11 Restore 25 camp units (see symbol ◭).

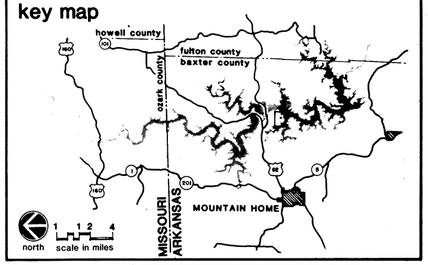
I.12 Provide cypress and sycamore plantings for tree cover.

Future Development

None Proposed

NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 20 N, R 12 W, SEC 34 AND 35
T 19 N, R 12 W, SEC 2 AND 3

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements F.1
Roads
Trails

north — scale in feet: 200 0 100 200 400 800

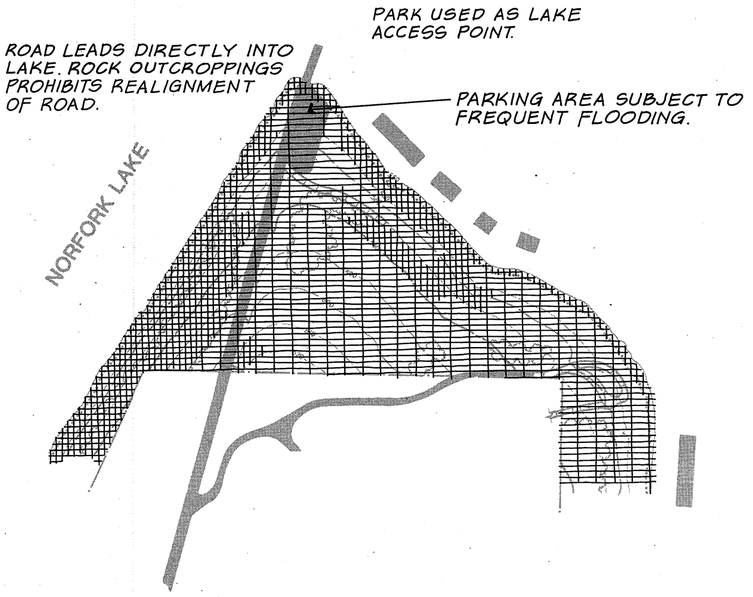
master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

ROBINSON POINT PARK DEVELOPMENT PLAN

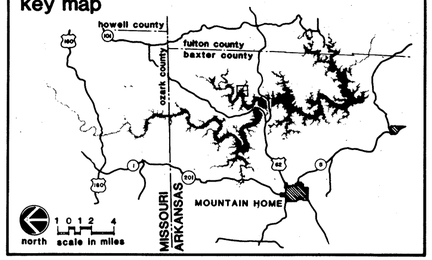
U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987



NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK., T. 20 N., R. 12 W., SECTION 13

key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation
- Park Boundaries

Not Indicated

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

200 0 100 200 400 800

north scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

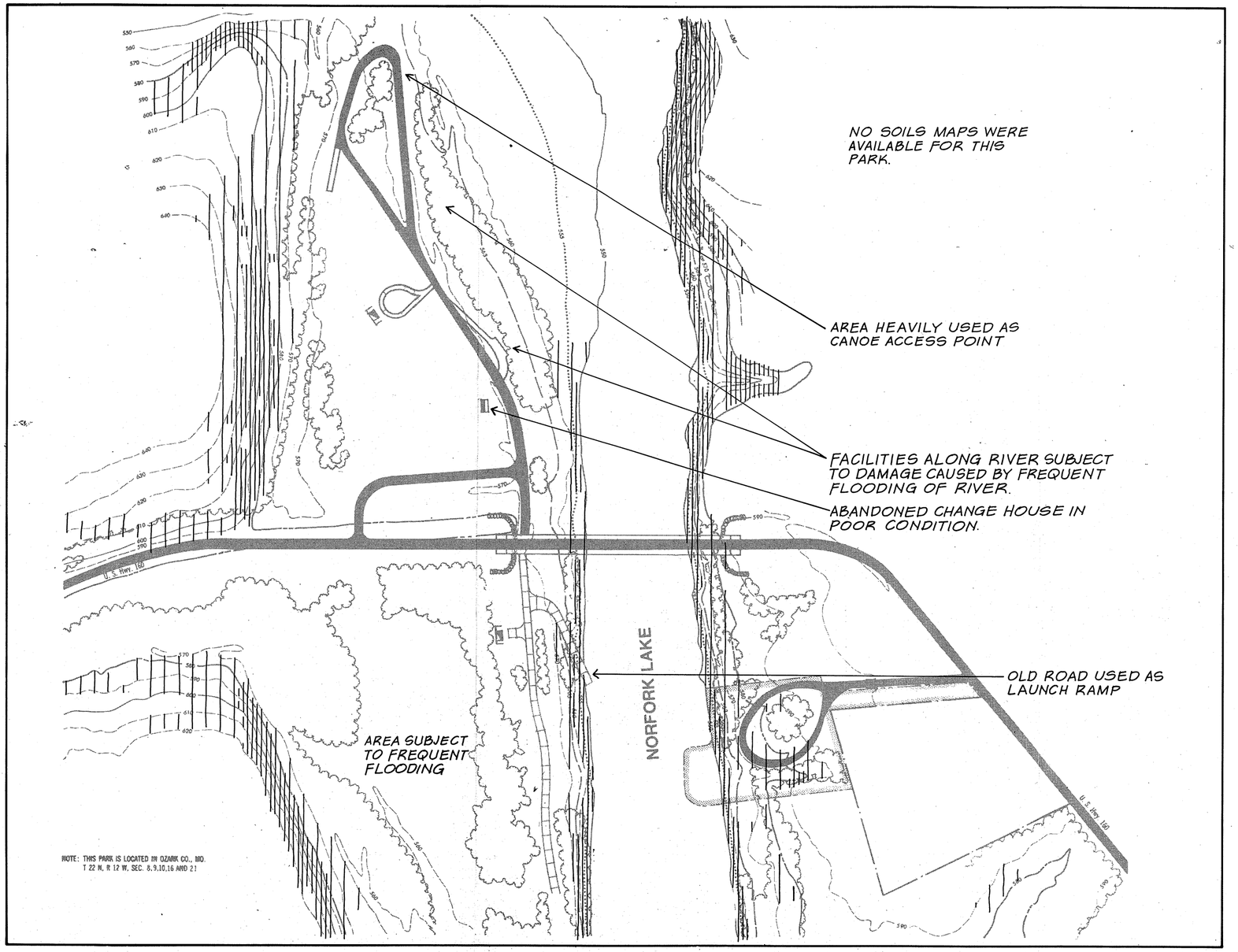
TALBERT PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

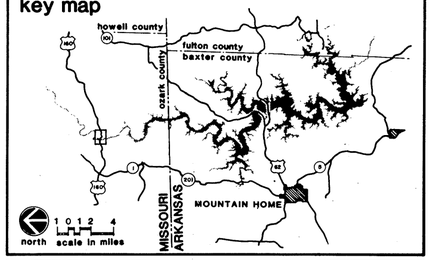
prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-21A



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

100 0 50 100 200 400

scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

TECUMSEH PARK COMPOSITE ANALYSIS MAP

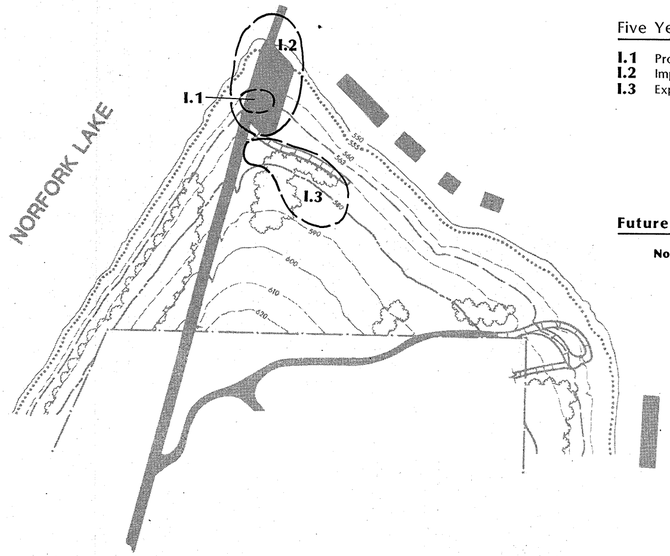
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

Existing Facilities

- 1-1 Lane Launch Ramp
- Paved Parking Area For ±15 Cars w/ Trailer



Five Year Initial Development

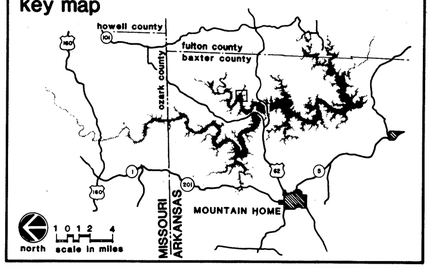
I.1 Provide barrier guard to redirect vehicular traffic.
I.2 Improve condition of launch ramp and repave parking area.
I.3 Expand parking to accommodate high water access to lake.

Future Development

None Proposed

NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK., T. 20 N., R. 12 W., SECTION 13

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5
Existing Vegetation — Not Indicated
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

200 0 100 200 400 800
north
scale in feet

master plan for Norfork Lake

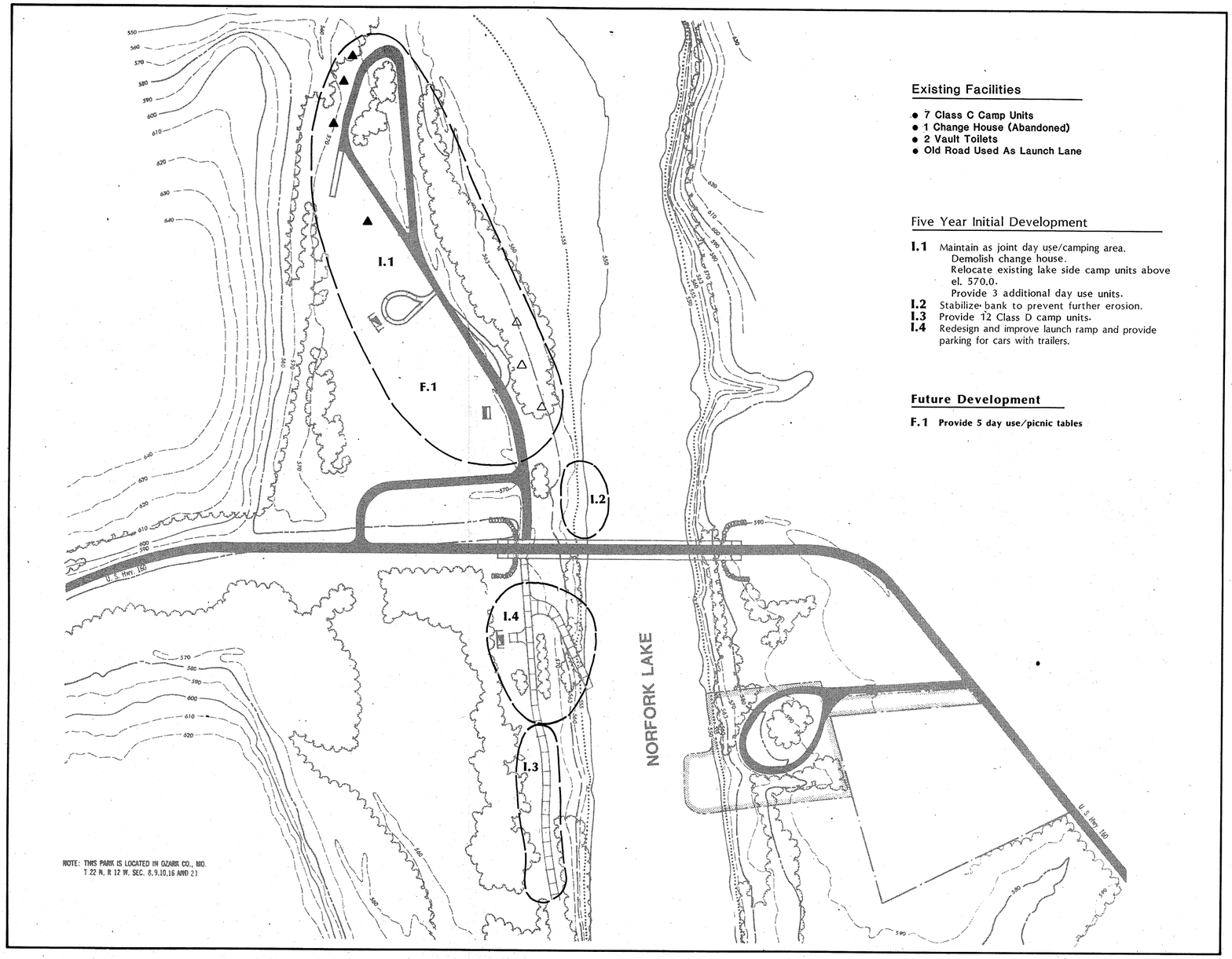
white river watershed
north fork river, arkansas and missouri

TALBERT PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987



Existing Facilities

- 7 Class C Camp Units
- 1 Change House (Abandoned)
- 2 Vault Toilets
- Old Road Used As Launch Lane

Five Year Initial Development

I.1 Maintain as joint day use/camping area.
Demolish change house.
Relocate existing lake side camp units above el. 570.0.
Provide 3 additional day use units.

I.2 Stabilize bank to prevent further erosion.

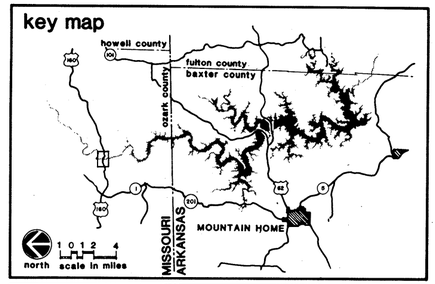
I.3 Provide 12 Class D camp units.

I.4 Redesign and improve launch ramp and provide parking for cars with trailers.

Future Development

F.1 Provide 5 day use/picnic tables

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5
Existing Vegetation — Not Indicated
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north

100 0 50 100 200 400
scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

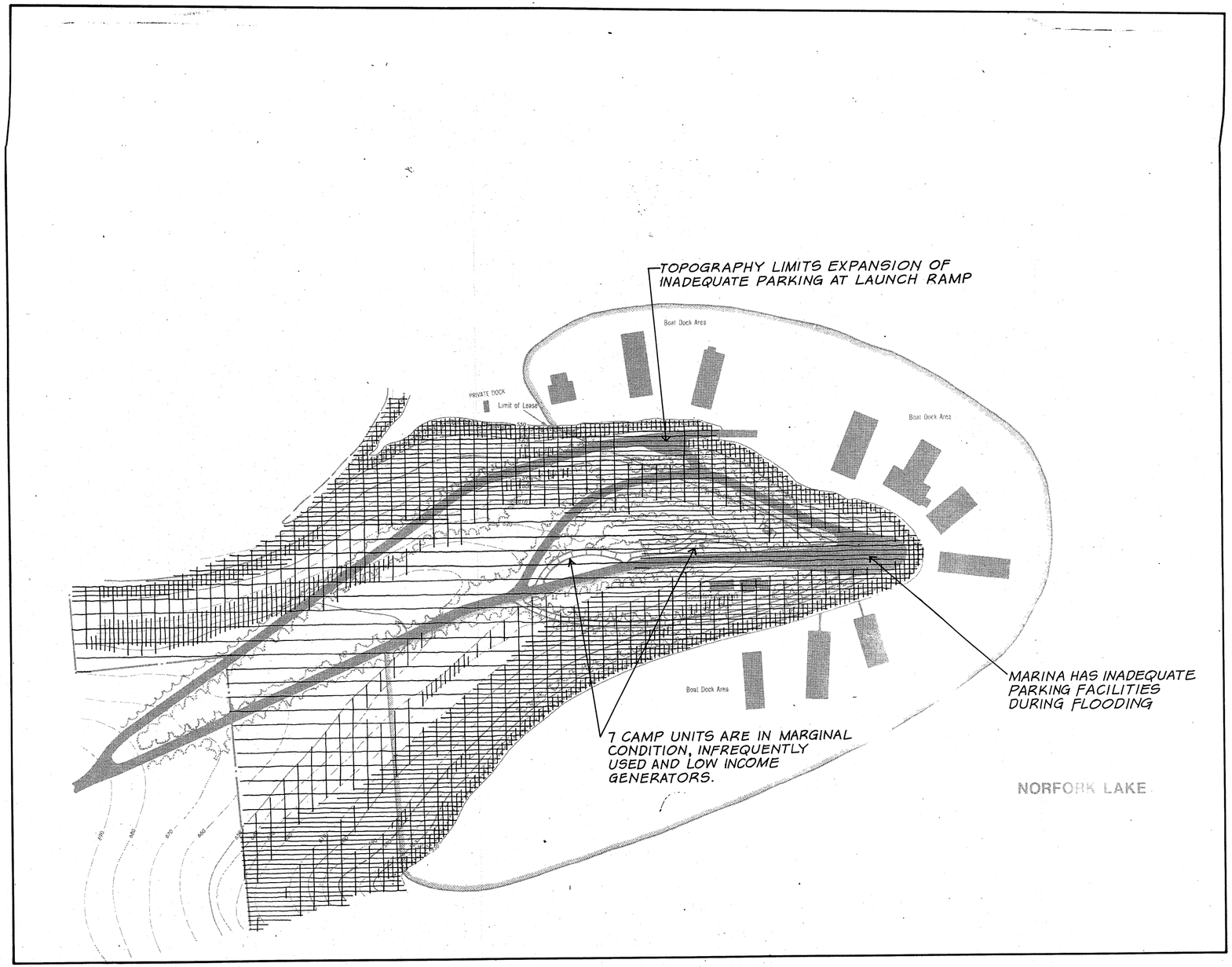
TECUMSEH PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

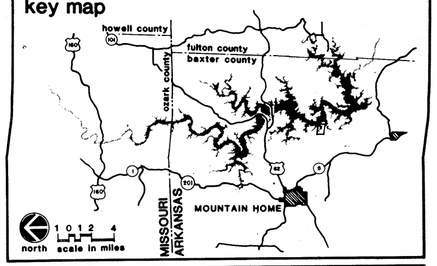
prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

PLATE 6-22B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation
- Park Boundaries

Not Indicated

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

100 0 50 100 200 400

scale in feet

master plan for
Norfork Lake
white river watershed
north fork river, arkansas and missouri

TRACY PARK COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

PLATE 6-23A

Existing Facilities

- 7 Class C Camp Units
- 1-1 Lane Launch Ramp
- 1-Vault Toilet
- Marina

Five Year Initial Development Plan

I.1 Limit use of park to launching and marina activities. Direct campers to Georges Cove Park.

I.2 Relocate existing camp units to Georges Cove Park (see symbol △). Obliterate gravel road and landscape (see symbol ////).

I.3 Provide high water parking area for marina.

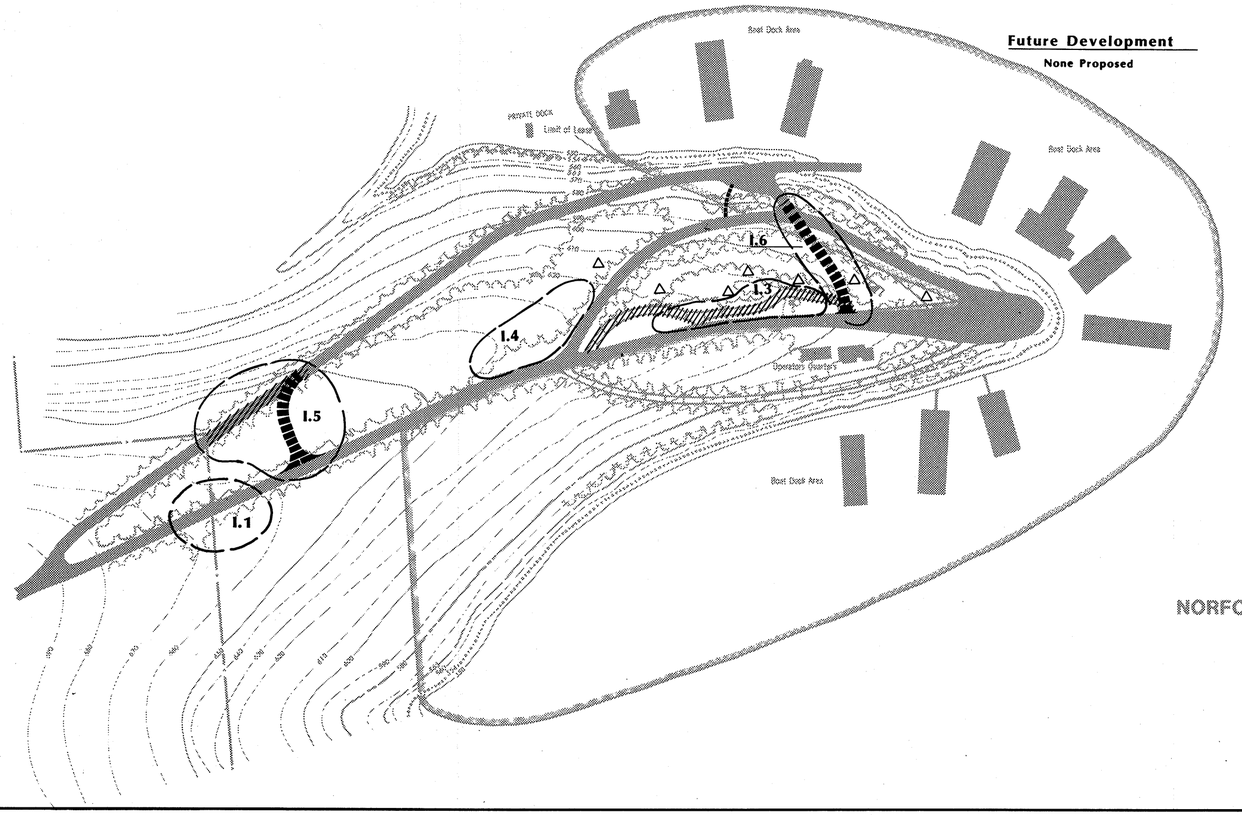
I.4 Provide parking and path for boat launch ramp.

I.5 Realign road, obliterate and landscape vacated road (see symbol ////).

I.6 Provide new road to separate boat launch traffic from marina area.

Future Development

None Proposed



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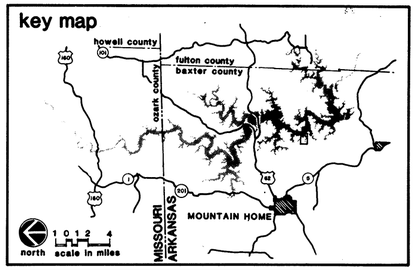

legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 583
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Five Year Initial Development

- Proposed Improvements — I.1
- Roads
- Trails
- Existing Camp Units to Remain
- Existing Camp Units to be Restored
- Existing Camp Units to be Removed

Future Development

- Proposed Improvements — F.1
- Roads
- Trails

north — 100 0 50 100 200 400 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

TRACY PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

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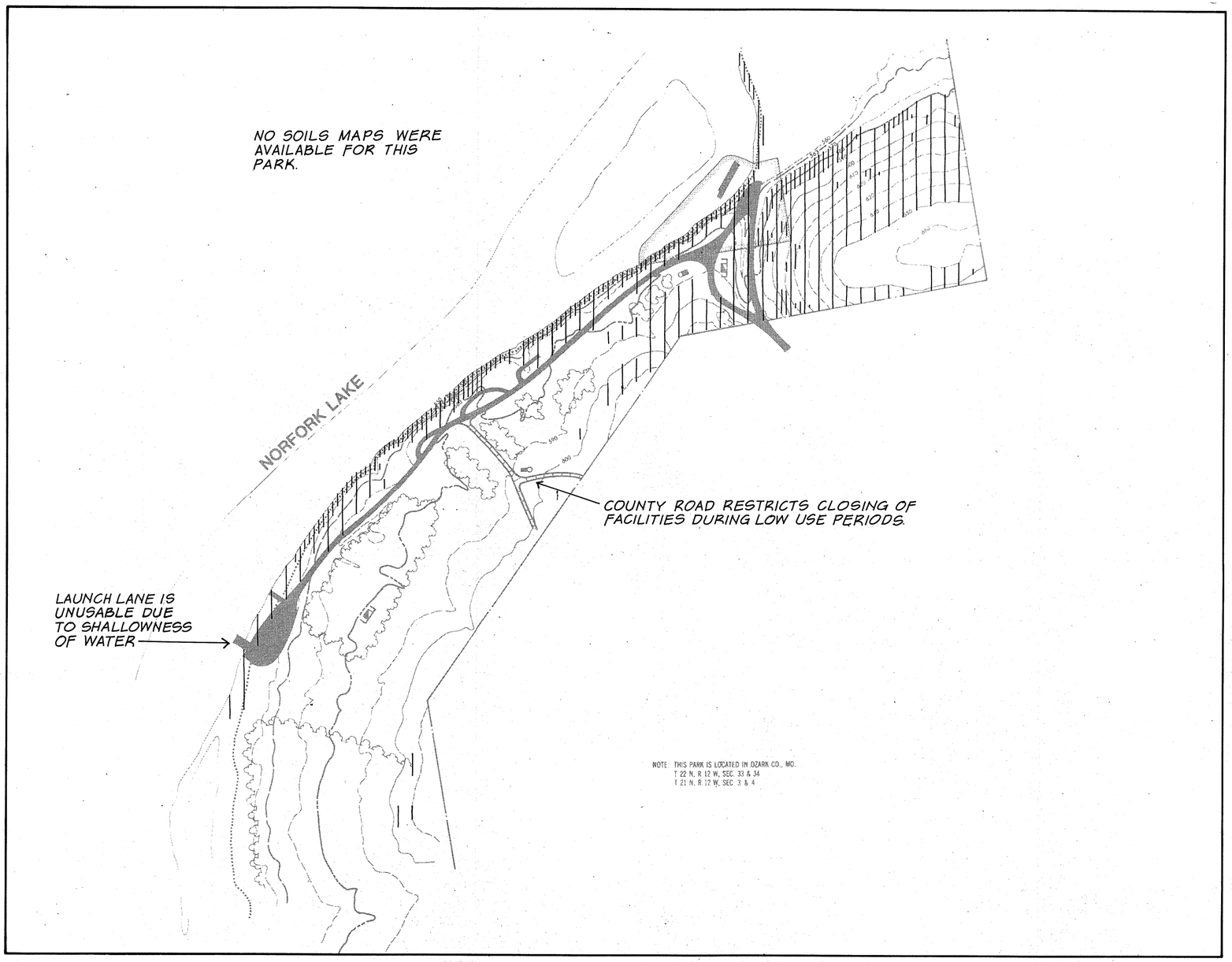
November 1987

PLATE 6-23B



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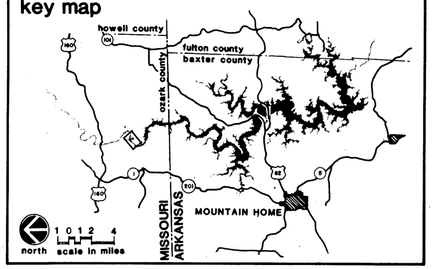

legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554 — Not Indicated
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5 — Not Indicated
- Existing Vegetation
- Park Boundaries

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

200 0 100 200 400 800

scale in feet

master plan for

Norfork Lake

white river watershed
north fork river, arkansas and missouri

UDALL PARK
COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

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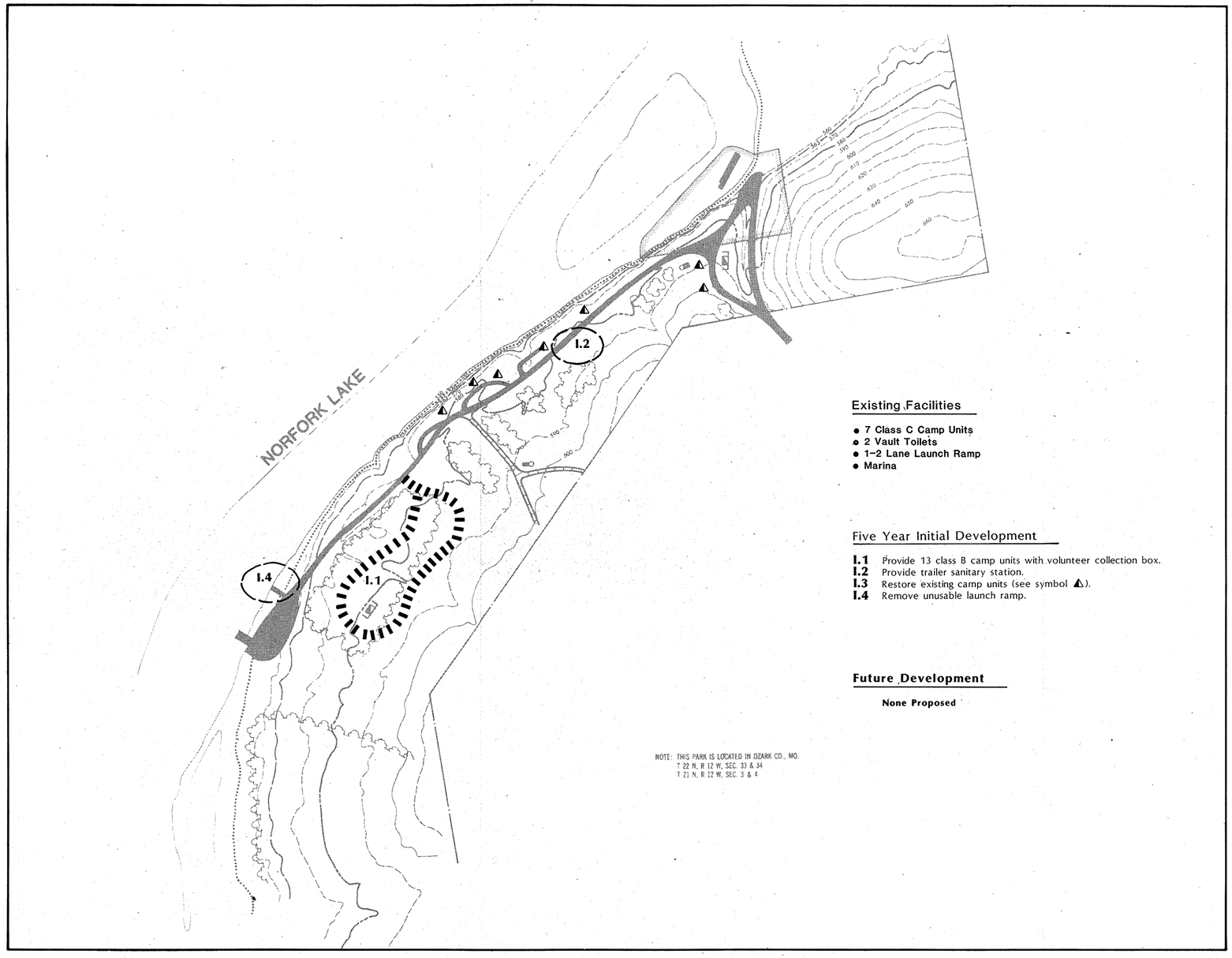
November 1987



Existing Facilities

- 7 Class C Camp Units
- 2 Vault Toilets
- 1-2 Lane Launch Ramp
- Marina

Five Year Initial Development

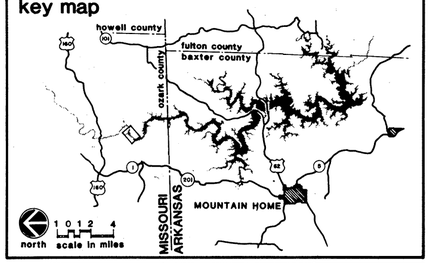
I.1 Provide 13 class B camp units with volunteer collection box.
I.2 Provide trailer sanitary station.
I.3 Restore existing camp units (see symbol ⚠).
I.4 Remove unusable launch ramp.

Future Development

None Proposed

NOTE: THIS PARK IS LOCATED IN OZARK CO., MO.
T 22 N, R 12 W, SEC. 33 & 34
T 21 N, R 12 W, SEC. 3 & 4

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5
Existing Vegetation — Not Indicated
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north — scale in feet: 200 0 100 200 400 800

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

UDALL PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

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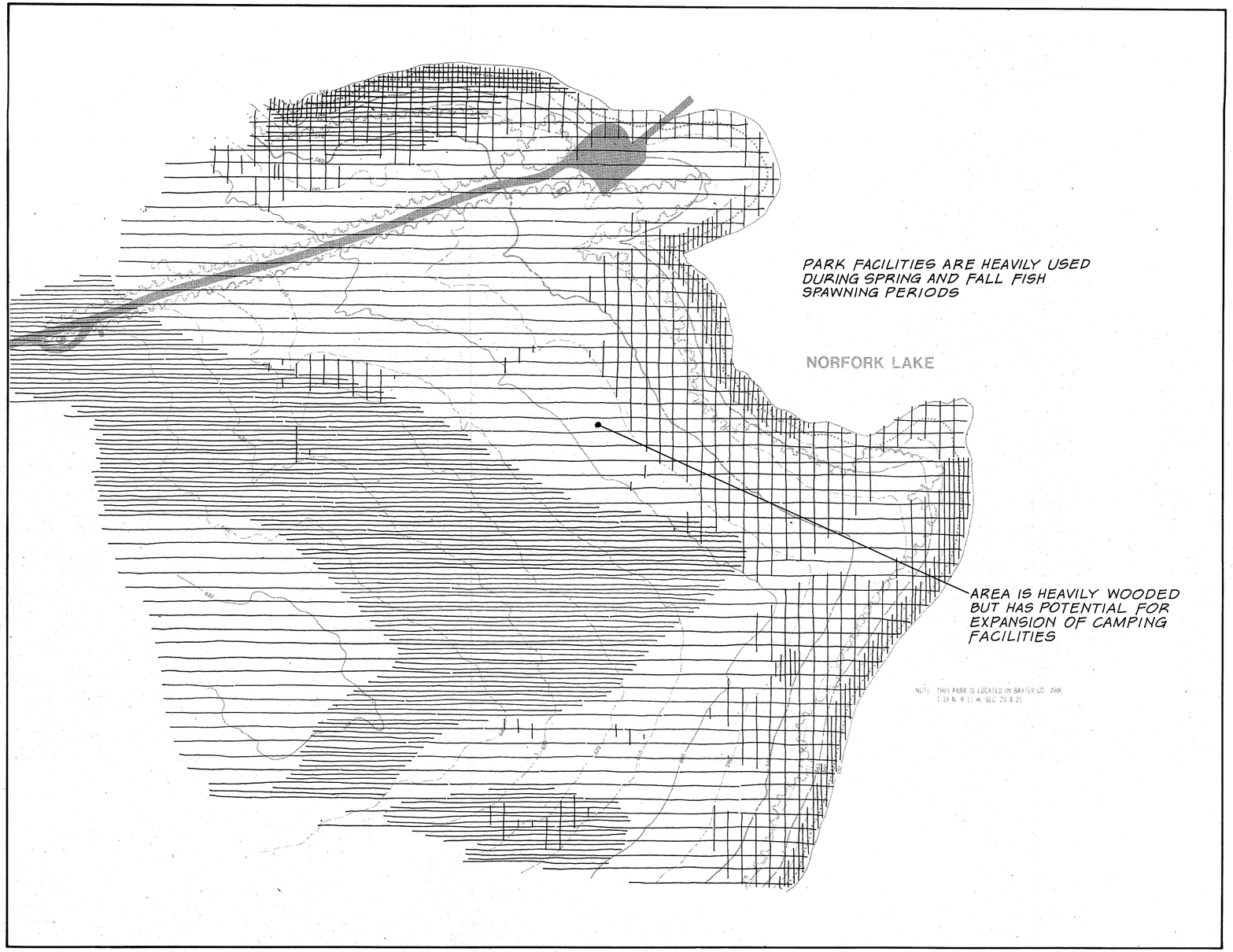
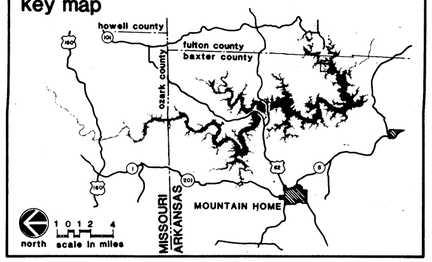
November 1987

PLATE 6-24B



key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation
- Park Boundaries

Not Indicated

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms- water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Development Constraints and Opportunities

- Unique Vegetation / Habitat
- Scenic Views
- Slopes Greater than 12%
- Slopes Greater than 25%
- Moderate Soil Limitations
- Severe Soil Limitations

north

100 0 50 100 200 400

scale in feet

master plan for
Norfork Lake

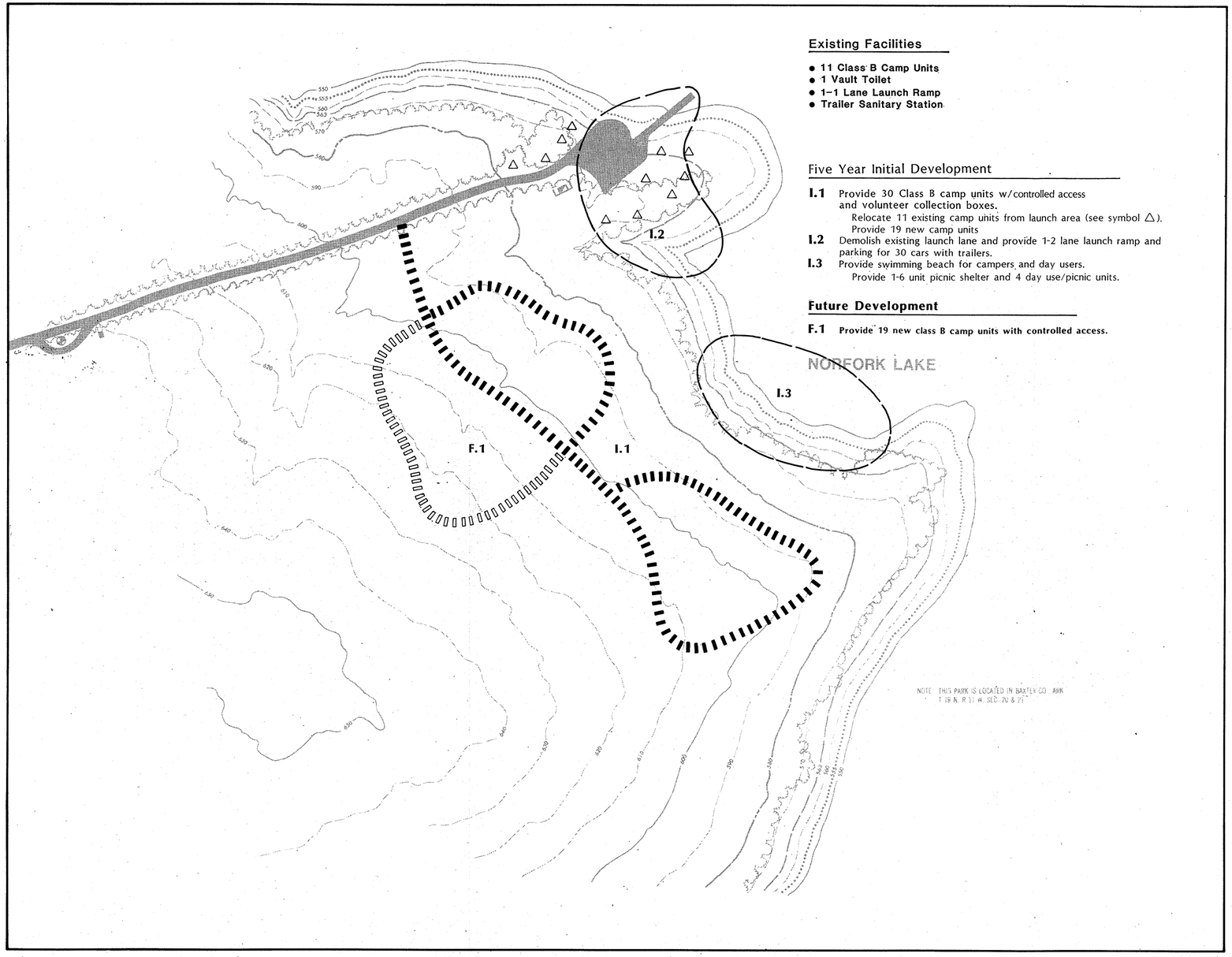
white river watershed
north fork river, arkansas and missouri

WOODS POINT PARK
COMPOSITE ANALYSIS MAP

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987



Existing Facilities

- 11 Class B Camp Units
- 1 Vault Toilet
- 1–1 Lane Launch Ramp
- Trailer Sanitary Station

Five Year Initial Development

I.1 Provide 30 Class B camp units w/controlled access and volunteer collection boxes.
Relocate 11 existing camp units from launch area (see symbol △).
Provide 19 new camp units

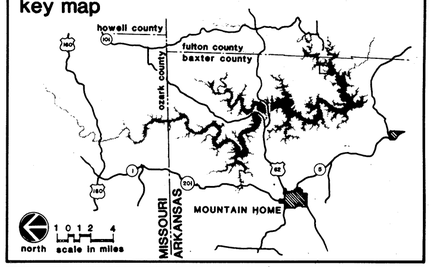
I.2 Demolish existing launch lane and provide 1-2 lane launch ramp and parking for 30 cars with trailers.

I.3 Provide swimming beach for campers and day users.
Provide 1-6 unit picnic shelter and 4 day use/picnic units.

Future Development

F.1 Provide 19 new class B camp units with controlled access.

key map



legend

Existing Conditions

Natural Features

- Top of Conservation Pool Elev. 554
- Maximum Seasonal Pool Elev. 555 (April to September)
- 5 Year Flood Elev. 563
- Top of Flood Control Pool Elev. 580
- 50 Year Flood Elev. 580.5
- Existing Vegetation
- Park Boundaries

Not Indicated

Roads

- Paved
- Gravel

Recreational Facilities

- Vault Toilet
- Restrooms– water borne
- Change House
- Entrance Station
- Picnic Shelter
- Gate
- Trail
- Swimming Beach
- Well
- Marina/ Trailer Sanitary Station
- Playground

Five Year Initial Development

- Proposed Improvements — I.1
- Roads
- Trails
- Existing Camp Units to Remain
- Existing Camp Units to be Restored
- Existing Camp Units to be Removed

Future Development

- Proposed Improvements — F.1
- Roads
- Trails

north · scale in feet: 100 0 50 100 200 400

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

WOODS POINT PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

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November 1987

PLATE 2 OF 5

CHAPTER 7

RESOURCE MANAGEMENT

CHAPTER 7

RESOURCE MANAGEMENT

7-01 MASTER PLAN APPENDICES

The following Master Plan Appendices were prepared for Norfork Lake and approved on the dates stated below. Information contained in these Appendices was used as part of the data base assembled to prepare this updated Master Plan. Until such time as the OMP is completed, the Appendices are still appropriate for use.

APPENDICES

No.	Subject	Date Approved
A	Project Resource Management	Jan 76
B	Forest Management Plan	Aug 79
C	Fire Protection Plan	Jan 75
D	Fish & Wildlife Management Plan	Aug 75
E	Project Safety Plan	Jun 73
F	Lakeshore Management Plan	Feb 82

7-02 OPERATIONAL MANAGEMENT PLAN

In accordance with ER 1130-2-400, and draft ER 1130-2-435, an Operational Management Plan (OMP) shall be prepared for Norfork Lake following approval of this Master Plan. The OMP shall replace the series of Appendices as listed in Section 7-01. The OMP shall be initiated by the Corps of Engineers operations element, with the coordination of planning, real estate, engineering, and safety elements of the Corps of Engineers.

The OMP shall include two parts: (1) Natural Resources Management, and (2) Park Management. Objectives and detailed implementation plans will be established for each part.

Part 1 of the OMP, the Natural Resources Management component, coordinates the management of all natural resources and integrates them with other project activities within a multiple use concept. The Natural Resources Management component of the OMP will replace the former Master Plan Appendix B (Forest Management), Appendix C (Fire Protection Plan) and Appendix D (Fish and Wildlife Management). This part will be based on a total ecosystem or compartment approach to natural resource management. Part 1 will include compartment descriptions, specific management objectives, and implementation plans.

The Park Management component of the OMP will replace the former Master Plan Appendix A (Project Resource Management), Appendix E (Project Safety), and Appendix F (Lakeshore Management). This component will include descriptions of management objectives and implementation plans for issues such

as safety, security, visitor assistance, lakeshore management, private exclusive use, outgrants, maintenance, recreation user fees, interpretation, cultural resources and special programs.

A complete outline of items to be included in both components of the OMP is provided as pages B-2 and B-3 of ER 1130-2-400. The OMP shall be prepared in accordance with, and as an implementation tool for, the Master Plan. Furthermore, the planning objectives of the Master Plan are consistent with OMP objectives as stated in ER 1130-2-400 including the following:

1. To enforce use/site limitations to prevent overcrowding or site deterioration.

2. To reduce or eliminate use conflicts.

3. To establish a cost effective recreation facilities rehabilitation program to increase visitor satisfaction and reduce operation and management costs.

4. To consolidate areas and close underutilized areas.

5. To implement approved management measures.

CHAPTER 8

COST ESTIMATES

CHAPTER 8

COST ESTIMATES

8-01 SUMMARY OF ESTIMATED COSTS

The cost estimates for development and restoration of recreation facilities at Norfork Lake were prepared in a manner consistent with the conceptual planning approach of this Master Plan. Table 8-01 provides a summary of basic development and restoration costs for each public recreation area. The estimated total cost for all facility development and restoration as proposed in the Five-Year Initial Development Plan is $6,775,687. These costs reflect estimated construction costs plus contingencies, engineering and design, and supervision and administration.

8-02 FACILITY COSTS

The cost estimates shown in this chapter are based on January 1987 price levels obtained from recent construction of new facilities in the project area, and general Corps of Engineers experience. For cost estimating purposes, it was assumed that all facilities at Norfork Lake will be designed in accordance with EM 1110-1-400 and other applicable Corps of Engineers design standards.

8-03 DEFINITION OF SELECTED UNIT COST ITEMS

Many of the unit cost items included in the following cost tables are self explanatory. However, there are a number of facility units or designations that require brief definitions to verify the derivation of unit cost estimates. These items include:

A. Tent/Trailer Camp Unit

Clearing, grubbing, and grading
Parking spur (12' x 70')
6" gravel base and 2" bituminous surface
Contained gravel impact area (approximately 800 sq.ft.)
Picnic table with benches
Fire ring or upright grill
One lantern post
Trash can and holder
Site identification marker

B. Camp Unit

Clearing and grubbing tent space
Contained gravel impact area (approximately 650 sq.ft.)
Picnic table
Fire circle
Lantern post

TABLE 8-01

SUMMARY OF COST ESTIMATES BY PARK
(Five-Year Initial Plan)

Norfork Lake

Park	Total Direct Cost	Contingencies 15%	Total Construction Cost	E&D S&A 15%	Total Estimated Cost
Bidwell Point	$ 48,840	$ 7,326	$ 56,166	$ 7,326	$ 63,492
Buzzard Roost	121,936	18,290	140,228	18,291	158,519
Cranfield	388,682	58,302	446,984	58,302	505,286
Curley Point	50,161	7,524	57,685	7,524	65,209
Gamaliel	771,360	115,704	887,064	115,704	1,002,768
Georges Cove	398,478	59,772	458,250	59,772	518,022
Hand	7,185	1,078	8,263	1,078	9,341
Henderson	262,891	39,434	302,325	39,434	341,759
Howard Cove	22,300	3,345	25,645	3,345	28,990
Jordan	460,687	69,103	529,790	69,103	598,893
Panther Bay	368,912	55,337	424,249	55,337	479,586
Pigeon Creek	135,081	20,262	155,343	20,262	175,605
Quarry Cove & Dam	232,592	34,889	267,481	34,889	302,370
Red Bank	270,408	40,561	310,969	40,561	351,530
Robinson Point	779,286	116,893	896,179	116,893	1,013,072
Talbert	84,637	12,696	97,333	12,696	110,029
Tecumseh	191,323	28,698	220,021	28,698	248,719
Tracy	25,986	3,898	29,884	3,898	33,782
Udall	176,029	26,404	202,433	26,404	228,837
Woods Point	415,292	62,294	477,586	62,294	539,880
TOTALS	$5,212,066	$781,810	$5,993,876	$781,811	$6,775,687

C. Major Entrance Station

Clearing and grubbing
Permanent control structure
Control gates
Electric and water service
Seeding and landscaping
Entrance and display boards
Paved parking area (12' x 70')

D. Minor Entrance Station

Clearing and grubbing
Temporary control structure
Entrance and display boards
Gravel parking area (20' x 20')

E. Picnic Unit

Clearing and grading
Concrete wearing pad (10' x 10')
Contained gravel impact area (400 sq.ft.)
Grill
Picnic table
1/3 trash container and holder
Seeding

F. Vault Toilet (Class C Facilities)

Masonry building with roof (10' x 20' minimum)
Facilities for each sex
Provide facilities for majority of users within a 600-ft. radius
Handicap accessibility

G. Vault Toilet with Showers (Class B Facilities)

Same as vault toilet
Provide one enclosed shower area per 100 persons of each sex

H. Water Borne Toilet (Class B+ Facilities)

Masonry structure with roof
Enclosed flush toilet and lavatory facilities for each sex
Septic/sand filter area (3,000 GPD)
Provide facilities for majority of users within a 600-ft. radius
Handicap accessibility

I. Change House (Day-Use/Swimming Areas)

Masonry structure with roof
Enclosed separate change areas for each sex
Handicap accessibility
Locate above EL. 580

J. Change House with Toilets and Showers
(Major Day-Use/Swimming Areas

Masonry structure with roof
Enclosed change areas with vault toilet and lavatory facilities for each sex
Storage area
Optional enclosed shower area
Freestanding shower facilities on outside of building
Concrete wearing pad (8' x 20')
Handicap accessibility
Locate above EL. 580

K. Swimming Beach

Water area - 250 L.F. of shore line x 80'
Sand beach area - 250' x 45' (2" minimum cover)
Lawn area - 250' x 60'
Clearing of water and land area
Grading of land area
Seeding
Markers and buoys

L. Camp Unit Restoration

Camp unit restoration needs at Norfork Lake range from minor site hardening (i.e., creation of controlled vehicle impact areas, walkways and tent pads) to complete site demolition, reconstruction and landscaping. The specific extent of site restoration required will be determined on a site-by-site basis as specific construction documents are prepared.

The lump sum unit cost applied in this plan for the line item titled "Restore Existing Camp Unit" represents a project-wide average per unit cost. Field surveys conducted during this study indicated that a total of 222 sites will require some level of restoration work. Of these sites, approximately 71 percent will only require relatively minor site hardening. The remaining 29 percent will require major restoration work including partial or complete redesign, soil aeration and improvements, and additional or replacement landscaping.

M. Facility Relocation

The cost for the relocation of a facility (i.e., camp unit, shelter) from one park to another is to be shared equally by both parks. The cost to relocate these facilities has been included in the cost estimate of each park that is affected. The cost of a facility relocation within a park is incurred only by that park.

8-04 COST SUMMARY TABLES

Tables 8-02 through 8-21 provide cost estimates for each park. These cost estimates are limited to the development of those facilities recommended as part of the Five-Year Initial Development Plan. Cost estimates were not prepared for the recommended Future Development Plans. Costs for relocating a facility have been included on the cost estimate for the site from which the facility is being relocated.

TABLE 8-02
BIDWELL PARK, Plate 6-03B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	0.5	$1,192
Selective Clearing	Ac.	3,107.00	1.8	5,593
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79	0.0	0
Gravel Parking	S.Y.	3.79	1,500.0	5,685
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00	5.0	9,825
Restore Existing Camp Unit	Each	1,950.00	11.0	21,450
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50	1,250.0	3,125
Signs/Control Gates				
Entrance	Each	500.00	1.0	500
Traffic Control	Each	100.00		0
Information	Each	500.00	1.0	500
Display Board	Each	800.00	1.0	800
Gates	Each	170.00	1.0	170

TABLE 8-02 (cont.)
BIDWELL PARK, Plate 6-03B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
				0
Sub-Total				48,840
Contingency	15%			7,326
Engineering and Design	10%			4,884
Supervision and Administration	5%			2,442
Total				$63,492

TABLE 8-03
BUZZARD ROOST PARK, Plate 6-04B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00		$0
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00	0.5	1,075
Roads and Parking				
Paved Roads	S.Y.	15.75	1,450.0	22,838
Paved Parking	S.Y.	15.41	4,533.0	69,854
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00	1.0	25,000
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00		0
Information	Each	500.00	1.0	500
Display Board	Each	800.00		0
Gates	Each	170.00	1.0	170

TABLE 8-03 (cont.)
BUZZARD ROOST PARK, Plate 6-04B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
Remove Existing Camp Units	Each	500.00	5.00	2,500
Sub-Total				121,936
Contingency	15%			18,290
Engineering and Design	10%			12,194
Supervision and Administration	5%			6,097
Total				$158,517

TABLE 8-04
CRANFIELD PARK, Plate 6-05B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	1.8	$4,291
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00	2.0	4,300
Roads and Parking				
Paved Roads	S.Y.	15.75	6,400.0	100,800
Paved Parking *	S.Y.	15.41	2,600.0	40,066
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42	2,000.0	2,840
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41	15.0	52,881
Relocate Tent Trailer Unit	Each	1,500.00	9.0	13,500
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	45.0	87,750
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00	6.0	15,900
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00	1.0	20,000
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00	1.0	500
Traffic Control	Each	100.00	3.0	300
Information	Each	500.00	1.0	500
Display Board	Each	800.00	1.0	800
Gates	Each	170.00	1.0	170

* SRUF FUND EXPENDITURE

TABLE 8-04 (cont.)
CRANFIELD PARK, Plate 6-05B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50	400.0	2,600
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	200.0	1,234
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
Relocate Entrance Station	L.S.	5,000.00	1.0	5,000
Remove Existing Camp Units	Each	500.00	13.0	6,500
Sub-Total				388,682
Contingency	15%			58,302
Engineering and Design	10%			38,868
Supervision and Administration	5%			19,434
Total				$505,286

TABLE 8-05
CURLEY POINT PARK, Plate 6-06B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	1.0	$2,384
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79	3,850.0	14,592
Gravel Parking	S.Y.	3.79	1,500.0	5,685
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00	1.0	25,000
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00	1.0	500
Traffic Control	Each	100.00		0
Information	Each	500.00	1.0	500
Display Board	Each	800.00		0
Gates	Each	170.00		0

TABLE 8-05 (cont.)

CURLEY POINT PARK, *Plate 6-06B*

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
Remove abandoned camp units	L.S.	1,500.00	1.0	1,500
Sub-Total				50,161
Contingency	15%			7,524
Engineering and Design	10%			5,016
Supervision and Administration	5%			2,508
Total				$65,209

TABLE 8-06
GAMALIEL PARK, Plate 6-07B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	3.1	$7,390
Selective Clearing	Ac.	3,107.00	2.9	9,010
Landscaping	Ac.	2,150.00	2.0	4,300
Roads and Parking				
Paved Roads *	S.Y.	15.75	7,200.0	113,400
Paved Parking *	S.Y.	15.41	2,250.0	34,673
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42	670.0	951
Water Related Facilities				
Boat Launch	Lane	25,000.00	1.0	25,000
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area) *	S.F.	0.38	45,000.0	17,100
Camping Facilities				
Tent Trailer Unit *	Each	3,525.41	24.0	84,610
Relocate Tent Trailer Unit	Each	1,500.00	12.0	18,000
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	28.0	54,600
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station *	Each	75,000.00	1.0	75,000
Day-Use Facilities				
Picnic Unit	Each	2,650.00	5.0	13,250
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00	1.0	5,000
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00	0.0	0
Traffic Control	Each	100.00	2.0	200
Information	Each	500.00	1.0	500
Display Board	Each	800.00	1.0	800
Gates	Each	170.00	2.0	340

* SRUF FUND EXPENDITURE

TABLE 8-06 (cont.)
GAMALIEL PARK, Plate 6-07B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00	1.0	150,000
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers *	Each	90,000.00	1.0	90,000
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00	1.0	29,000
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50	700.0	4,550
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	800.0	4,936
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
Sub-Total				771,360
Contingency	15%			115,704
Engineering and Design	10%			77,136
Supervision and Administration	5%			38,568
Total				$1,002,768

TABLE 8-07
GEORGES COVE PARK
Plates 6-08B and 6-09B
COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	4.0	$9,536
Selective Clearing	Ac.	3,107.00	1.0	3,107
Landscaping	Ac.	2,150.00	2.4	5,160
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79	5,200.0	19,708
Gravel Parking	S.Y.	3.79	2,000.0	7,580
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00	2.0	50,000
Boat Launch Removal	Lane	1,082.45	1.0	1,082
Beach (Sand and Water Area)	S.F.	0.38	10,000.0	3,800
Camping Facilities				
Tent Trailer Unit	Each	3,525.41	13.0	45,830
Relocate Tent Trailer Unit	Each	1,500.00	7.0	10,500
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	10.0	19,500
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00	3.0	7,950
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00	1.0	20,000
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00	0.0	0
Traffic Control	Each	100.00	2.0	200
Information	Each	500.00	2.0	1,000
Display Board	Each	800.00		0
Gates	Each	170.00	2.0	340

TABLE 8-07 (cont.)
GEORGES COVE PARK
Plates 6-08B and 6-09B
COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00	1.0	60,000
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00	1.0	90,000
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50	1,600.0	10,400
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	200.0	1,234
Others				
Rehabilitate Beach	L.S.	7,500.00	0.0	0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00	2.0	0 1,000
Volunteer Collection System	Each	400.00	2.0	800
Remove Existing Vault Toilets	L.S.	1,000.00	1.0	1,000
Sub-Total				398,478
Contingency	15%			59,772
Engineering and Design	10%			39,848
Supervision and Administration	5%			19,924
Total				$518,022

TABLE 8-08
HAND PARK, Plate 6-10B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00		$0
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79	1,500.0	5,685
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00		0
Information	Each	500.00	1.0	500
Display Board	Each	800.00		0
Gates	Each	170.00	0.0	0

TABLE 8-08 (cont.)
HAND PARK, Plate 6-10B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
Remove abandoned tables	L.S.	1,000.00	1.0	1,000
Sub-Total				7,185
Contingency	15%			1,078
Engineering and Design	10%			719
Supervision and Administration	5%			359
Total				$9,341

TABLE 8-09
HENDERSON PARK, Plate 6-11B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	1.5	$3,576
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00	0.5	1,075
Roads and Parking				
Paved Roads	S.Y.	15.75	2,567.0	40,430
Paved Parking	S.Y.	15.41	4,500.0	69,345
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00	2.0	50,000
Boat Launch Removal	Lane	1,082.45	2.0	2,165
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00		0
Information	Each	500.00	3.0	1,500
Display Board	Each	800.00		0
Gates	Each	170.00		0

* SRUF FUND EXPENDITURE

TABLE 8-10
HOWARD COVE PARK, Plate 6-12B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00		$0
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00	2.0	4,300
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00	12.0	18,000
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00		0
Information	Each	500.00		0
Display Board	Each	800.00		0
Gates	Each	170.00		0

TABLE 8-10 (cont.)
HOWARD COVE PARK, Plate 6-12B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Elecrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
				0
Sub-Total				22,300
Contingency	15%			3,345
Engineering and Design	10%			2,230
Supervision and Administration	5%			1,115
Total				$28,990

TABLE 8-11
JORDAN PARK, Plate 6-13B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	2.5	$5,960
Selective Clearing	Ac.	3,107.00	0.7	2,175
Landscaping	Ac.	2,150.00	1.0	2,150
Roads and Parking				
Paved Roads	S.Y.	15.75	5,800.0	91,350
Paved Parking	S.Y.	15.41	550.0	8,476
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42	800.0	1,136
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41	7.0	24,678
Relocate Tent Trailer Unit	Each	1,500.00	12.0	18,000
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	17.0	33,150
Major Entrance Station *	Each	120,000.00	1.0	120,000
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00	5.0	13,250
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00	1.0	5,000
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50	1,750.0	4,375
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00	2.0	200
Information	Each	500.00	2.0	1,000
Display Board	Each	800.00	1.0	800
Gates	Each	170.00	1.0	170

* SRUF FUND EXPENDITURE

TABLE 8-11 (cont.)
JORDAN PARK, Plate 6-13B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00	1.0	60,000
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Day Shower Unit	Each	25000	1	25,000
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50	400.0	2,600
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	400.0	2,468
Others				
Rehabilitate Beach	L.S.	10,000.00	1.0	10,000
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
				0
Sub-Total				460,687
Contingency	15%			69,103
Engineering and Design	10%			46,069
Supervision and Administration	5%			23,034
Total				$598,893

TABLE 8-12
PANTHER BAY PARK, Plate 6-14B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	0.8	$1,907
Selective Clearing	Ac.	3,107.00	7.4	22,992
Landscaping	Ac.	2,150.00	2.0	4,300
Roads and Parking				
Paved Roads	S.Y.	15.75	1,400.0	22,050
Paved Parking	S.Y.	15.41	1,950.0	30,050
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45	2.0	2,165
Beach (Sand and Water Area)	S.F.	0.38	58,000.0	22,040
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00	7.0	10,500
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	7.0	13,650
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit *	Each	2,650.00	8.0	21,200
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit) *	Each	20,000.00	2.0	40,000
Playground	Each	18,000.00	1.0	18,000
Relocate Picnic Shelter	Each	5,000.00	1.0	5,000
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00	1.0	500
Traffic Control	Each	100.00	2.0	200
Information	Each	500.00	2.0	1,000
Display Board	Each	800.00	1.0	800
Gates	Each	170.00		0

* SRUF FUND EXPENDITURE

TABLE 8-12 (cont.)
PANTHER BAY PARK, Plate 6-14B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers *	Each	90,000.00	1.0	90,000
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well *	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible) *	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	50.0	309
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00	7.0	0 3,500
Playground	L.S.	30,000	1.0	30,000
Sub-Total				368,912
Contingency	15%			55,337
Engineering and Design	10%			36,891
Supervision and Administration	5%			18,446
Total				$479,586

TABLE 8-13
PIGEON CREEK PARK, Plates 6-15B and 6-16B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	4.1	$9,774
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00	2.3	4,945
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79	583.0	2,210
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45	1.0	1,082
Beach (Sand and Water Area)	S.F.	0.38	37,500.0	14,250
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00	4.0	10,600
Relocate Picnic Unit	Each	1,000.00	5.0	5,000
Picnic Shelter (6-unit)	Each	20,000.00	1.0	20,000
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50	100.0	250
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00		0
Information	Each	500.00	2.0	1,000
Display Board	Each	800.00		0
Gates	Each	170.00	1.0	170
Barricade	Each	1,500.00	1.0	1,500

TABLE 8-13 (cont.)
PIGEON CREEK PARK, Plates 6-15B and 6-16B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00	1.0	60,000
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00	5.0	0 2,500
Remove Vault Toilet	Each	1,800.00	1.0	1,800
Sub-Total				135,081
Contingency	15%			20,262
Engineering and Design	10%			13,508
Supervision and Administration	5%			6,754
Total				$175,605

TABLE 8-14
QUARRY COVE & DAM AREA, Plates 6-17B and 6-18B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	1.0	$2,384
Selective Clearing	Ac.	3,107.00	0.3	932
Landscaping	Ac.	2,150.00	8.4	18,060
Roads and Parking				
Paved Roads	S.Y.	15.75	1,200.0	18,900
Paved Parking *	S.Y.	15.41	3,600.0	55,476
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79	3,600.0	13,644
Road Removal	S.Y.	1.42	4,550.0	6,461
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00	10.0	15,000
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	18.0	35,100
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00	5.0	13,250
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50	1,800.0	4,500
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00	1.0	100
Information	Each	500.00	3.0	1,500
Display Board	Each	800.00		0
Gates	Each	170.00	1.0	170

TABLE 8-14 (cont.)
QUARRY COVE & DAM AREA, Plates 6-17B and 6-18B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00	1.0	20,000
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00	21.0	4,515
Underground Electrical Line	L.F.	6.50	1,400.0	9,100
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00	1.0	10,000
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00	7.0	0 3,500
Sub-Total				232,592
Contingency	15%			34,889
Engineering and Design	10%			23,259
Supervision and Administration	5%			11,630
Total				$302,370

TABLE 8-15
RED BANK PARK, Plate 6-19B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	2.0	$4,768
Selective Clearing	Ac.	3,107.00	0.5	1,554
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75	2,133.0	33,595
Paved Parking	S.Y.	15.41	3,600.0	55,476
Gravel Road	S.Y.	3.79	2,800.0	10,612
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42	200.0	284
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00	12.0	18,000
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00	2.0	200
Information	Each	500.00	1.0	500
Display Board	Each	800.00	1.0	800
Gates	Each	170.00	1.0	170

TABLE 8-15 (cont.)
RED BANK PARK, Plate 6-19B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00	1.0	60,000
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00	1.0	18,000
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00	30.0	6,450
Underground Electrical Line	L.F.	6.50	2,500.0	16,250
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0 0
Restore launch ramp / parking	L.S.	$15,000	1.0	15,000
Sub-Total				270,408
Contingency	15%			40,561
Engineering and Design	10%			27,041
Supervision and Administration	5%			13,520
Total				$351,530

TABLE 8-16
ROBINSON POINT PARK, Plate 6-20B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	0.75	$1,788
Selective Clearing	Ac.	3,107.00	0.5	1,554
Landscaping	Ac.	2,150.00	2.0	4,300
Roads and Parking				
Paved Roads	S.Y.	15.75	10,000.0	157,500
Paved Parking	S.Y.	15.41	2,425.0	37,369
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42	2,400.0	3,408
Water Related Facilities				
Boat Launch	Lane	25,000.00	1.0	25,000
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41	17.0	59,932
Relocate Tent Trailer Unit	Each	1,500.00	19.0	28,500
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	79.0	154,050
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00	0.0	0
Traffic Control	Each	100.00	3.0	300
Information	Each	500.00	4.0	2,000
Display Board	Each	800.00	2.0	1,600
Gates	Each	170.00	2.0	340

* SRUF FUND EXPENDITURE

TABLE 8-16 (cont.)
ROBINSON POINT PARK, Plate 6-20B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers *	Each	150,000.00	1.0	150,000
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Shower Facilities	Each	$25,000	3.0	75,000
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00	1.0	29,000
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00	35.0	7,525
Underground Electrical Line	L.F.	6.50	800.0	5,200
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	1,000.0	6,170
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0
Sub-Total				779,286
Contingency	15%			116,893
Engineering and Design	10%			77,929
Supervision and Administration	5%			38,964
Total				$1,013,072

TABLE 8-17
TALBERT PARK, Plate 6-21B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	0.5	$1,192
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41	4,500.0	69,345
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00	1.0	100
Information	Each	500.00	1.0	500
Display Board	Each	800.00		0
Gates	Each	170.00		0
Barrier Guard	Each	1500.00	1.0	1,500

TABLE 8-17 (cont.)
TALBERT PARK, Plate 6-21B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0 0
Launch Ramp Improvement	L.S.	12,000	1.0	12,000
Sub-Total				84,637
Contingency	15%			12,696
Engineering and Design	10%			8,464
Supervision and Administration	5%			4,232
Total				$110,029

TABLE 8-18
TECUMSEH PARK, Plate 6-22B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00		$0
Selective Clearing	Ac.	3,107.00	0.75	2,330
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79	1,500.0	5,685
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00	1.0	25,000
Boat Launch Removal	Lane	1,082.45	1.0	1,082
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41	12.0	42,305
Relocate Tent Trailer Unit	Each	1,500.00	3.0	4,500
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00	3.0	7,950
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00		0
Information	Each	500.00	2.0	1,000
Display Board	Each	800.00		0
Gates	Each	170.00	1.0	170

TABLE 8-18 (cont.)
TECUMSEH PARK, Plate 6-22B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00	1.0	500
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00	1,700.0	76,500
Convert Camp Unit to Picnic Unit	Each	500.00		0 0
Removal of Change House	Each	1,800.00	1.0	1,800
Sub-Total				191,323
Contingency	15%			28,698
Engineering and Design	10%			19,132
Supervision and Administration	5%			9,566
Total				$248,719

TABLE 8-19
TRACY PARK, Plate 6-23B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing *	Ac.	$2,384.00	0.75	$1,788
Selective Clearing	Ac.	3,107.00		0
Landscaping	Ac.	2,150.00	0.5	1,075
Roads and Parking				
Paved Roads	S.Y.	15.75		0
Paved Parking *	S.Y.	15.41	700.0	10,787
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42	800.0	1,136
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45		0
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41		0
Relocate Tent Trailer Unit	Each	1,500.00	7.0	10,500
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00	2.0	200
Information	Each	500.00	1.0	500
Display Board	Each	800.00		0
Gates	Each	170.00		0

* SRUF FUND EXPENDITURE

TABLE 8-19 (cont.)
TRACY PARK, Plate 6-23B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station*	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50		0
Water System				
Water Well	V.L.F.	60.00		0
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00		0
Water Line (2")	L.F.	6.17		0
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0 0
Sub-Total				25,986
Contingency	15%			3,898
Engineering and Design	10%			2,599
Supervision and Administration	5%			1,299
Total				$33,782

TABLE 8-20
UDALL PARK, Plate 6-24B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	0.8	$1,907
Selective Clearing	Ac.	3,107.00	0.2	621
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75	3,600.0	56,700
Paved Parking	S.Y.	15.41		0
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00		0
Boat Launch Removal	Lane	1,082.45	1.0	1,082
Beach (Sand and Water Area)	S.F.	0.38		0
Camping Facilities				
Tent Trailer Unit	Each	3,525.41	13.0	45,830
Relocate Tent Trailer Unit	Each	1,500.00		0
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00	7.0	13,650
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00		0
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00		0
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00	1.0	100
Information	Each	500.00	1.0	500
Display Board	Each	800.00		0
Gates	Each	170.00	1.0	170

TABLE 8-20 (cont.)
UDALL PARK, Plate 6-24B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00		0
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00	1.0	18,000
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50	900.0	5,850
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	400.0	2,468
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0 0
Volunteer Collection System	Each	400	1.0	400
Sub-Total				176,029
Contingency	15%			26,404
Engineering and Design	10%			17,603
Supervision and Administration	5%			8,801
Total				$228,837

TABLE 8-21
WOODS POINT PARK, Plate 6-25B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Site Preparation				
Clearing and Grubbing	Ac.	$2,384.00	2.0	$4,768
Selective Clearing	Ac.	3,107.00	0.2	621
Landscaping	Ac.	2,150.00		0
Roads and Parking				
Paved Roads	S.Y.	15.75	5,400.0	85,050
Paved Parking	S.Y.	15.41	2,750.0	42,378
Gravel Road	S.Y.	3.79		0
Gravel Parking	S.Y.	3.79		0
Road Removal	S.Y.	1.42		0
Water Related Facilities				
Boat Launch	Lane	25,000.00	2.0	50,000
Boat Launch Removal	Lane	1,082.45	1.0	1,082
Beach (Sand and Water Area)	S.F.	0.38	30,000.0	11,400
Camping Facilities				
Tent Trailer Unit	Each	3,525.41	19.0	66,983
Relocate Tent Trailer Unit	Each	1,500.00	11.0	16,500
Primitive Camp Unit	Each	1,965.00		0
Restore Existing Camp Unit	Each	1,950.00		0
Major Entrance Station	Each	120,000.00		0
Minor Entrance Station	Each	75,000.00		0
Day-Use Facilities				
Picnic Unit	Each	2,650.00	5.0	13,250
Relocate Picnic Unit	Each	1,000.00		0
Picnic Shelter (6-unit)	Each	20,000.00	1.0	20,000
Playground	Each	18,000.00		0
Relocate Picnic Shelter	Each	5,000.00		0
Trail Facilities				
Hiking Trail (wood chip)	L.F.	2.50		0
Signs/Control Gates				
Entrance	Each	500.00		0
Traffic Control	Each	100.00		0
Information	Each	500.00	3.0	1,500
Display Board	Each	800.00		0
Gates	Each	170.00	2.0	340

TABLE 8-21 (cont.)
WOODS POINT PARK, Plate 6-25B

COST ESTIMATE
Norfork Lake

Item	Unit	Unit Cost	Quantity	Total Cost
Sanitary Structures				
Vault Toilet (Masonry)	Each	$60,000.00	1.0	60,000
Waterborne Toilet with Showers	Each	150,000.00		0
Waterborne Toilet	Each	125,000.00		0
Change House	Each	20,000.00		0
Change House with Toilets and showers	Each	90,000.00		0
Sanitary System				
Septic/Sand Filter (3000 GPD)	Each	29,000.00		0
Trailer Sanitary Station	Each	18,000.00		0
Marine Sanitary Station	Each	30,000.00		0
Manhole	Each	800.00		0
Gravity Sewer Line	L.F.	23.00		0
Electrical System				
Camp Unit Hookup	Each	215.00		0
Underground Electrical Line	L.F.	6.50	1,000.0	6,500
Water System				
Water Well	V.L.F.	60.00	375.0	22,500
Hand Pump	Each	500.00		0
Electric Pump (5 HP submersible)	Each	6,250.00	1.0	6,250
Water Line (2")	L.F.	6.17	1,000.0	6,170
Others				
Rehabilitate Beach	L.S.	10,000.00		0
Shoreline Protection	S.Y.	45.00		0
Convert Camp Unit to Picnic Unit	Each	500.00		0 0
Sub-Total				415,292
Contingency	15%			62,294
Engineering and Design	10%			41,529
Supervision and Administration	5%			20,765
Total				$539,880

ATTACHMENT A

COORDINATION LETTERS AND PUBLIC INFORMATION WORKSHOPS

ATTACHMENT A

COORDINATION LETTERS

AND

PUBLIC INFORMATION WORKSHOPS

HARLAND BARTHOLOMEW & ASSOCIATES, INC.
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

December 10, 1986

Mr. Harold Grimmett, Director
Arkansas Natural Heritage Commission
Heritage Center, Suite 200
225 East Markham
Little Rock, AR 72201

RE: Request for Information
Norfork Lake Master Plan Update
Contract No. DACW 03-86-C-0074
HBA Project No. PH5473

Dear Mr. Grimmett:

Harland Bartholomew & Associates, Inc. is currently under contract with the U.S. Army Corps of Engineers, Little Rock District, to prepare a Master Plan Update for Norfork Lake, located on the Arkansas/Missouri border.

The purpose of this letter is to notify you of our planning effort, and to request any information that you have regarding threatened or endangered terrestrial flora that are known or may be expected to occur within the Arkansas portion of the Norfork Lake project boundaries.

We certainly appreciate any information that you can provide.

Very truly yours,

HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Robert B. Bax

Robert B. Bax
Project Manager

RBB:gh

cc: Mr. David L. Burrough
Chief, Planning Division
Little Rock District, Corps of Engineers

7745 Carondelet Avenue, Suite 308 • St. Louis, MO 63105 • (314) 726-1300

ARKANSAS NATURAL HERITAGE COMMISSION

THE HERITAGE CENTER, SUITE 200
225 EAST MARKHAM
LITTLE ROCK, ARKANSAS 72201
Phone: (501) 371-1706

Harold K. Grimmett
Director

Bill Clinton
Governor

Date: December 30, 1986
Subject: Norfork Lake
ANHC Job #CF-85
Dated December 10, 1986
Received December 15, 1986



Robert B. Bax
Project Manager
Harland Bartholomew & Associates
7745 Carondelet Avenue, Suite 308
St. Louis, MO 63105

Dear Mr. Bax:

Staff members of the Arkansas Natural Heritage Commission have reviewed our files for locations of special plant and animal species and other natural features of significance occurring in or near Norfork Lake and within the jurisdiction of the Corps of Engineers. The result of this review is presented on the enclosed form. Specific localities for the elements listed, where known, are indicated on the enclosed photocopies of topographic map sections (refer to the attached legend for explanation of symbols and abbreviations).

Two of the four plant species listed--Castanea pumila var. ozarkana and Plantago cordata--are candidates for federal listing as Engangered or Threatened, and Plantago cordata is already on the Natural Heritage Commission's list of state threatened plants. The remaining two--Echinacea paradoxa and Penstemon cobaea var. purpureus--are regional endemics that are by no means common.

Please keep in mind that the project area may contain important natural features of which we are unaware. Likewise, some of the features reported to have occurred historically within the area may exist no longer. The quantity and quality of data collected by the Natural Heritage Inventory Program are dependent on the research and observations of many individuals and organizations. In many cases the information is not the result of comprehensive or site-specific field surveys. Natural Heritage Inventory reports summarize the existing information known to the Program at the time of the request. They should never be regarded as final statements on the elements or areas under consideration, nor should they be substituted for on-site surveys required for environmental assessments. Because our files are updated constantly as additional data are received, you may want to check with us again at a later date.

If you would like further information about any record (marked by a colored dot) or our management recommendations for specific elements, please get back in touch with us. Should the information provided here be used in any publication, please cite the Arkansas Natural Heritage Commission as the source.

Thank you for consulting us.

Sincerely,

Bill Pell

Bill Pell
Stewardship Chief

Enclosed: Invoice
Data summary and legend
Maps

ANHC JOB I.D. NO. 36092-CF-85
December 22, 1986

ARKANSAS NATURAL HERITAGE INVENTORY PROGRAM
DATA SUMMARY

QUAD. NAME	SCIENTIFIC NAME	COMMON NAME	T/R/S	PRE-CISION	STATUS	DATE OF INFO.
NORFORK DAM NORTH 7.5'	CASTANEA PUMILA VAR. OZARKENSIS	OZARK CHINKAPIN	19N/11W/32	G	C2	1958
NORFORK DAM NORTH 7.5'	DELPHIUM TRELEASEI	TRELEASE'S LARKSPUR	18N/12W/02	S		1982
NORFORK DAM NORTH 7.5'	PENSTEMON COBAEA VAR. PURPUREUS	BEARD-TONGUE	18N/12W/02	S		1982
NORFORK DAM SOUTH 7.5'	PLANTAGO CORDATA	HEART-LEAVED PLANTAIN	18N/12W/11	S	C2/ST	1984
ELIZABETH 7.5'	NO OCCURRENCES ARE CURRENTLY RECORDED FOR THIS QUAD.					
MTN. HOME EAST 7.5'	NO OCCURRENCES ARE CURRENTLY RECORDED FOR THIS QUAD.					
CLARKRIDGE 7.5'	NO OCCURRENCES ARE CURRENTLY RECORDED FOR THIS QUAD.					
GAMALIEL 7.5'	NO OCCURRENCES ARE CURRENTLY RECORDED FOR THIS QUAD.					

LEGEND

PRECISION CODES

S = Element is specifically mapped, but element's presence has not been confirmed by Natural Heritage Commission field survey or similarly reliable source.

G = Element is mapped to a general region identified by a geographic name on a U.S.G.S. quadrangle.

STATUS CODES

C2 - Category 2; the FWS states that further biological research and field study will be necessary in order to determine if these species should be listed as Threatened or Endangered.

ST - State Threatened; applied to native taxa which are likely to become endangered in Arkansas in the foreseeable future.

HARLAND BARTHOLOMEW & ASSOCIATES, INC.
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

November 7, 1986

Mr. Larry R. Gale, Director
Missouri Department of Conservation
2901 West Truman Blvd.
Jefferson City, MO 65101

RE: Request for Information
Norfork Lake Master Plan Update
Contract No. DACW03-86-C-0074
HBA Project No. H5473

Dear Mr. Gale:

Harland Bartholomew & Associates, Inc. is currently under contract with the U.S. Army Corps of Engineers, Little Rock District, to prepare a Master Plan Update for Norfork Lake, located on the Arkansas/Missouri border.

Part of our work on this project involves updating the status of management plans or activities that other agencies may be involved with at Norfork Lake. It is our understanding that the Missouri Department of Conservation does not currently have any direct responsibility for natural resource management at the Norfork Lake project. However, we would like to notify you of our planning effort, and to create an opportunity for your agency to identify any existing information or concerns that you may have regarding the Norfork Lake master planning process.

In addition to this general notification of the Norfork planning program, we are also requesting any information that you have regarding threatened or endangered aquatic and terrestrial flora and fauna that are known or may be expected to occur within the Missouri portion of the Norfork Lake project boundaries.

We certainly appreciate any assistance or information that you can provide at this time.

Very truly yours,

HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Robert B. Bax

Robert B. Bax, Project Manager

RBB/gh

cc: Mr. David L. Burrough
Chief, Planning Division
Little Rock District, Corps of Engineers

7745 Carondelet Avenue, Suite 308 • St. Louis, MO 63105 • (314) 726-1300

MISSOURI DEPARTMENT OF CONSERVATION

MAILING ADDRESS:
P.O. Box 180
Jefferson City, Missouri 65102-0180

STREET LOCATION:
2901 West Truman Boulevard
Jefferson City, Missouri

Telephone 314/751-4115
LARRY R. GALE, Director

50 YEARS of CONSERVATION
1937 • 1987

December 29, 1986

Mr. Robert B. Bax, Project Manager
Harland Bartholomew & Associates, Inc.
7745 Carondelet Ave., Suite 308
St. Louis, MO 63105

Re: Norfork Lake Master Plan Update
Contract No. DACW03-86-C-0074
HBA Project No. H5473

Dear Mr. Bax:

Thank you for your request for information and concerns regarding the Norfork Lake Master Plan Update. The statement that our Department does not have direct responsibility for natural resource management at the Norfork project is only partially true. Our agency does not hold a license with the Corps of Engineers for management of project lands; however, we do have constitutional authority over fish and wildlife residing on the Missouri portion of Corps property. In addition, we currently monitor fish populations and manage the Missouri portion of the reservoir fishery. Data from our monitoring efforts are available upon request.

The Department is interested in helping your firm and the Corps establish fish and wildlife goals and objectives for the lake and surrounding federal lands. These objectives should of necessity be coordinated with the State of Arkansas. To this end, we would appreciate involvement in this study and its implementation. The following long and short range issues should be considered for your effort:

A. Establish fish and wildlife conservation as an authorized project purpose.

B. Establish a review process of environment modification projects (i.e. sand and gravel dredging, stream and lake modifications, structures, etc.).

C. Establish reservoir level rule curves as guidelines for improving water level manipulations for fish, wildlife and recreation.

D. Provide vegetative cover or other structure for lake/wet soil habitat.

E. Manage project lands to minimize soil erosion (at or below "T") and enhance aesthetic values.

COMMISSION

JEFF CHURAN
Chillicothe

JOHN POWELL
Rolla

JOHN B. MAHAFFEY
Springfield

RICHARD T. REED
East Prairie

We understand there may be provisions in the Water Resources Development Act of 1986 for consideration of these suggested goals. Perhaps your plan could examine the merits and feasibility of further study.

Your inquiry also requested information on threatened or endangered species that are known or may be expected to occur within the Missouri portion of the project boundaries. The following data was found in our files:

Aster furcatus, Forked aster - This plant is rare in Missouri and is a federal candidate for listing as a threatened or endangered species. A known population occurs within 0.5 mile of the Reservoir management area boundary.

Amsonia ciliata var. filifolia, Ciliate blue star - Two occurrences of this plant occur in the Norfork Reservoir area. This plant is endangered in Missouri. A known population occurs within 0.5 mile of the Reservoir management area boundary.

Eriogonum longifolium, Umbrella plant - This plant is endangered in Missouri. A population occurs within the Reservoir management area boundary.

Ardea herodias, Great blue heron - This is a B ranked rookery occurring within the project area. This is not a state listed species.

This listing should not be considered complete; these are merely the records presently in our file. A full inventory of the presence of sensitive species or natural communities would require a comprehensive on-site investigation.

The opportunity to assist and comment on your endeavors is appreciated.

Sincerely,

Dan F. Dickneite

DAN F. DICKNEITE
ENVIRONMENTAL SERVICES OFFICER

cc: Mr. David L. Burrough
Little Rock District, Corps of Engineers

Arkansas Game and Fish Commission
Little Rock, Arkansas

U. S. Fish and Wildlife Service
Columbia, Missouri

HARLAND BARTHOLOMEW & ASSOCIATES, INC.
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

January 27, 1987

Mr. Dan F. Dickneite
Environmental Services Officer
Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65102-0180

RE: Norfork Lake Master Plan Update
Contract No. DACW03-86-C-0074
HBA Project No. H5473

Dear Mr. Dickneite:

Thank you for your letter dated December 29, 1986 regarding input into the Norfork Lake Master Plan Update. We have reviewed your letter, and incorporated appropriate information into the preliminary draft Master Plan to be submitted to the Corps of Engineers in February, 1987.

We are writing this letter to respond to several questions raised in your correspondence regarding additional issues to be evaluated in the Master Plan. Specific questions that you raised and related responses are as follows:

1. Comment. Establish fish and wildlife conservation as an authorized project purpose.

   Response. Fish and wildlife management activities are not currently included as an authorized project purpose at Norfork Lake. In order for this change to take place, several requirements would need to be met including:

   (a) A non-Federal public entity would have to share related costs.

   (b) The benefits of the new purpose must exceed those of the purpose it is replacing.

   (c) Congress must pass legislation to allow the change or addition.

   The Corps of Engineers has also informed us that the White River Lakes Study was completed in 1985 by the Little Rock District. The primary purpose of this study was to review project operations and changes to authorized purposes. The study was coordinated with the Missouri Department of Conservation. However, the study conclusion, based on economic benefits and the lack of a cost-sharing partner, did not recommend any changes in the authorized purposes of Norfork Lake.

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2. Comment. Establish a review process of environment modification projects (i.e., sand and gravel dredging, stream and lake modifications, structures, etc.).

   Response. The Corps of Engineers currently responds to these issues through an extensive permit application and review program.

3. Comment. Establish reservoir level rule curves as guidelines for improving water level manipulations for fish, wildlife and recreation.

   Response. The use of reservoir rule curves for water level mainpulations is done at the request of fish and wildlife agencies. However, the ability to meet these requests is limited within the constraints of authorized project purposes. Since fish and wildlife management is not an authorized purpose at Norfork Lake, the degree of lake level manipulation desired by the Missouri Department of Conservation may not be feasible. However, this issue may certainly be examined in more detail as part of the Corp's Operational Management Plan to be prepared after the Master Plan has been completed.

4. and 5. Comment. Provide vegetative cover or other structure for lake/wet soil habitat . . . . , and manage project lands to minimize soil erosion (at or below "T") and enhance aesthetic values.

   Response. These issues are generally beyond the scope of the Corps' master planning process. However, they will be considered and discussed as part of the Operational Management Plan to be prepared by the Corps at some point after the Master Plan is completed.

We appreciate your comments and trust that you will have an opportunity to review the draft Norfork Lake Master Plan when it is completed. Please do not hesitate to contact us if you have any comments regarding the information contained in this letter.

Very truly yours,

HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Robert B. Bax

Robert B. Bax, Project Manager

RBB/gh

cc: Mr. David L. Burrough
Chief, Planning Division
Little Rock District, Corps of Engineers

HARLAND BARTHOLOMEW & ASSOCIATES, INC.
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November 7, 1986

Mr. Steve M. Wilson, Director
Arkansas Game and Fish Commission
#2 Natural Resource Drive
Little Rock, AR 72205

RE: Request for Information
Norfork Lake Master Plan Update
Contract No. DACW03-86-C-0074
HBA Project No. H5473

Dear Mr. Wilson:

Harland Bartholomew & Associates, Inc. is currently under contract with the U.S. Army Corps of Engineers, Little Rock District, to prepare a Master Plan Update for Norfork Lake, located on the Arkansas/Missouri border.

Part of our work on this project involves updating the status of management plans or activities that other agencies may be involved with at Norfork Lake. It is our understanding that the Arkansas Game and Fish Commission has entered into a lease agreement with the Corps of Engineers for the management of fish and wildlife resources within a 2,162 acre area located on the west side of Norfork Lake.

The purpose of this letter is to notify you of our planning effort, and to create an opportunity for your agency to provide us with any basic natural resource information, plans or descriptions of current fish or wildlife management activities relating to Norfork Lake. This may include existing water quality, forest, fishery or wildlife resource studies; habitat improvement activities; or activities at the Norfork Lake fish nursery operation.

In addition to this request for general natural resource information that may be available, we are also requesting any information that you have regarding threatened or endangered aquatic and terrestrial flora and fauna that are known or may be expected to occur within the Arkansas portion of the Norfork Lake project boundaries.

We certainly appreciate any assistance or information that you can provide at this time. If you have any general concerns that you would like to see addressed in the final master plan, or the associated project operations plan, please do not hesitate to inform us of these concerns.

Very truly yours,

HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Robert B. Bax

Robert B. Bax, Project Manager

RBB/gh

cc: Mr. David L. Burrough
Chief, Planning Division
Little Rock District, Corps of Engineers

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Steve N. Wilson
Director

Carl Hunter
Assistant Director

Arkansas Game & Fish Commission

December 3, 1986

DEC - 8 1986
Harland Bartholomew & Assoc.
St. Louis, Mo.

Mr. Robert B. Bax
Harland Bartholomew & Associates, Inc.
7745 Carondelet Avenue, Suite 308
St. Louis, Missouri 63105

Dear Mr. Bax:

I am writing in response to your letter addressed to Mr. Steve N. Wilson dated November 7, 1986 which requests information on endangered and threatened species for inclusion in your preparation of a Master Plan Update for Norfork Lake, located on the Arkansas/Missouri border.

Wildlife in our State officially classified as being in danger with extinction coincide with those animals so designated on the Federal Register. The following Federally-endangered or threatened animals are known or may be expected to occur within the Arkansas portion of the Norfork Lake project boundaries:

Gray bat (Myotis grisescens) - E
Indiana bat (Myotis sodalis) - E
Ozark big-eared bat (Plecotus townsendii ingens) - E
Bald eagle (Haliaeetus leucocephalus) - E
Arctic peregrine falcon (Falco peregrinus tundrius) - T

We know of no caves in the immediate project area that harbor endangered bats; however, there are caves in close proximity. These animals are known to forage almost exclusively over open water, including streams, rivers and lakes with forested shorelines.

The bald eagle frequents Norfork Lake during its fall-winter migration into Arkansas. The Army Corps of Engineers conducts an eagle count on this reservoir each year during the month of January. In 1986 seventeen (17) bald eagles were observed. Information on feeding and roosting sites on Norfork Lake may be obtained from the Corps.

The peregrine falcon may pass through the project area during the fall-winter months in association with migratory waterfowl populations.

For information on endangered and threatened flora, you should contact the Arkansas Natural Heritage Commission, 225 E. Markham, Little Rock, AR 72201.

Information on fish and wildlife management activities relating to Norfork Lake will be forthcoming from the Fisheries and Wildlife Divisions of the Arkansas Game and Fish Commission.

Please let me know if you desire further info on endangered and threatened animals found within the project area.

Sincerely,

Sam Barkley

Sam Barkley, Chief
Endangered, Nongame &
Urban Wildlife Section

cc: Wildlife Div. w/copy of incoming
Fisheries Div. w/copy of incoming

SWB:ds

HARLAND BARTHOLOMEW & ASSOCIATES, INC.
PLANNING • ENGINEERING • LANDSCAPE ARCHITECTURE

November 7, 1986

Mr. Jim Pulliam, Regional Director
U.S. Department of the Interior
U.S. Fish and Wildlife Service
75 Spring Street, S.W.
Atlanta, GA 30303

RE: Request for Information
Norfork Lake Master Plan Update
Contract No. DACW03-86-C-0074
HBA Project No. H5473

Dear Mr. Pulliam:

Harland Bartholomew & Associates, Inc. is currently under contract with the U.S. Army Corps of Engineers, Little Rock District, to prepare a Master Plan Update for Norfork Lake, located on the Arkansas/Missouri border.

Part of our work on this project involves updating the status of management plans or activities that other agencies may be involved with at Norfork Lake. It is our understanding that the U.S. Fish and Wildlife Service has been involved in the operation of the fish nursery operation at Norfork Lake.

The purpose of this letter is to notify you of our planning effort, and to create an opportunity for the U.S. Fish and Wildlife Service to identify any existing information or concerns that you have that may be pertinent to the master planning process for Norfork Lake.

We are particularly interested in any pertinent information you can provide concerning the existing fish nursery, and the identification of any threatened or endangered aquatic or terrestrial flora and fauna that are known or may be expected to occur within the Norfork Lake project boundaries.

We certainly appreciate any assistance or information that you can provide at this time.

Very truly yours,

HARLAND BARTHOLOMEW & ASSOCIATES, INC.

Robert B. Bax, Project Manager

RBB/gh

cc: Mr. David L. Burrough
Chief, Planning Division
Little Rock District, Corps of Engineers

Mr. Bill Lindsay, Hatchery Manager
Norfork National Fish Hatchery

Mr. Kevin Wood
U.S. Fish and Wildlife Service

Note: The U.S. Fish and Wildlife Service did not provide a response to this early coordination letter.

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ADVANCE NOTICE
PUBLIC INFORMATION WORKSHOP
NORFORK LAKE MASTER PLAN

Harland Bartholomew & Associates, Inc. is currently under contract with the Little Rock District, Corps of Engineers to prepare an updated Master Plan for the Norfork Lake project. A Preliminary Draft Plan has been prepared. Copies of the Draft Plan may be reviewed at the Norfork Lake Project Office located at 324 West 7th Street in Mountain Home, Arkansas.

The Draft Plan provides general recommendations regarding the future development, operation and management of each Corps of Engineer operated public recreation area at Norfork Lake. A Public Information Workshop will be held to discuss plan recommendations, and to provide an opportunity for public discussion and comments. This meeting will be held as follows:

Date: Monday, February 23, 1987

Time: 7:00 p.m.

Place: Mountain Magic Theater
Highway 62 East, Mountain Home, Arkansas

NORFORK LAKE MASTER PLAN

PUBLIC INFORMATION WORKSHOP

DATE: February 23, 1987

TIME: 7:00 p.m.

PLACE: Mountain Home, Arkansas

Agenda

- Welcome/Introductions
- Status of Master Planning Process for Norfork Lake
- Scope and Purpose of the Master Plan
- Recreation Facility Needs at Norfork Lake
- Resource Use Objectives
- Conceptual Public Recreation Area Plans and Recommendations
- Open Discussion

INTEROFFICE CORRESPONDENCE

DATE: 2/28/87

TO: Subject File
LOCATION:

FROM: R. B. Bax
LOCATION:
PHONE:

SUBJECT: Norfork Lake Public Workshop
Contract No. DACW 03-86-C-0074

FILE: PH5473

A. General

A public workshop was held at the Mountain Magic Theater in Mountain Home, Arkansas on Monday, February 23, 1987 at 7:00 P.M. This workshop was held to present and discuss the Preliminary Draft Master Plan for Norfork Lake.

Advance notices were sent to over 150 area residents and agency representatives. (See Attachment A.) The workshop was also announced through the local media.

Approximately 119 persons attended the meeting. (See Attachment B.) Handouts were provided to identify the meeting agenda, and to provide each participant with selected information from the Draft Master Plan. (See Attachment C.) The entire plan was also available prior to and after the meeting at the Corps Mountain Home project office.

Each participant was provided with a comment form. A copy of this form, and copies of each response received have been included as Attachment D.

Since this was not a formal public hearing, a complete meeting transcript was not prepared. However, the entire meeting was documented on both videotape and cassette audio tape. Copies of these tapes are on file at the Mountain Home Project Office.

B. Meeting Format

David Burrough (Chief, Planning Division, Little Rock District COE) welcomed the public and provided introductory remarks. Bob Bax (Project Manager, Harland Bartholomew & Associates, Inc.) discussed the status of the master planning program for Norfork Lake, the scope and purpose of the plan, recreation facility needs at Norfork Lake, and selected "Resource Use Objectives" as included in the Draft Master Plan. Jim Linton (Project Landscape Architect, HBA) concluded the presentation portion of the meeting with a slide show illustrating and describing plan concepts and recommendations for each of the 20 Corps-operated public recreation areas at Norfork Lake.

After the presentation Mr. Burrough opened the meeting to questions and discussion on all items of interest to the public. Responses have been summarized in this memorandum in the context of each public area where concern was expressed. Related issues raised by the public are also summarized at the end of the site-specific comments. The following summary statements

reflect input provided from the floor, as well as items provided on the comment forms.

C. Public Comments Related to Specific Recreation Areas

1. Bidwell

— Local resorts depend on the day use beach and tables at Bidwell and would be against reduction of facilities at this site.

2. Buzzard Roost

— Unauthorized swimming, scuba lessons, etc. is common practice near the existing boat launch. This should be stopped since it represents a significant safety hazard.

— Felt that there is a significant water pollution problem at this site which is not compatible with marina use.

— The area needs a high water launch ramp. However, area cannot support an additional ramp unless a significant amount of additional parking is provided.

— There is a significant conflict at the parking area between private dock owners and marina customers.

— At low water conditions, marina is "land locked" and boat owners cannot get in or out of dock slips.

— The new parking area needs to be seeded, improved and paved to stop erosion and siltation of cove.

3. Cranfield

— Many area residents expressed concern over the proposal to close the Cranfield beach area to day users. Stressed that children in the area walk to this site, and that local resort customers near Cranfield would resent not being able to use the area for day use.

— Causeway access road should be raised at least six feet to be effective (versus two feet as proposed in draft plan).

4. Curley Point

— High water affects use and access at this area. Several private property areas depend upon COE road access which is subject to flooding at several low points. (However, COE cannot spend funds to provide access to private property.)

- Abandoned picnic sites attract uncontrolled camping use and result in trash and other site impacts. Felt that COE has done an inadequate job of maintaining and controlling this area.

- Appproximately 40 families live near this site and depend on it for lake access. They would like to see a formal boat launch ramp, toilets, improved access road, and related improvements.

5. Gamaliel — No Comments

6. Georges Cove — No Comments

7. Hand

   - The area needs to have an upgraded or new boat launch ramp and more parking.

8. Henderson

   - Would be acceptable to convert the existing use area to day use. However, area businesses would not like to lose all the campers. Suggested that camping should be relocated to the other side of the road (near the proposed new boat launch ramp, sanitary dump station and well).

   - Construction of a new launch lane as proposed in the draft plan would be highly desirable.

   - Norfork Ferry Tours submitted proposal to COE to lease the Henderson Campground area in October 1986. This request was denied. Concern was expressed that the COE was now reversing their policy on this issue.

9. Howard Cove

   - Area resident felt that the plan should have proposed more improvements at Howard Cove. Area boat ramp needs to be upgraded, particularly if the Bidwell Point ramp area is closed to day use.

   - Area resorts and marina customers use the camp units and would be against closing these sites.

   - Was noted that the campground supports the marina, and the marina makes significant payments to the COE.

10. Jordan — No Comments

11. Panther Bay

- Concern was expressed that the proposed day use area would not be large enough to support day use diverted from several other public areas as specified by the draft plan.
- Also, concerned with the proposed beach location (marina boat traffic conflict and steep shoreline).
- High water gate should be left open to encourage/allow visitors to use Henderson area businesses instead of Mountain Home.

12. Pigeon Creek

- Support was expressed for an improved beach and day use facility.

13. Quarry Cove — No Comments

14. Red Bank

- This area is heavily used by Southern Missouri and residents (West Plains, Willow Springs, etc.); and the existing facilities should not be removed.

15. Robinson Point — No Comments

16. Talbert — No Comments

17. Tecumseh — No Comments

18. Tracy

- Area needs a new boat launch ramp and expanded parking area.

19. Udall — No Comments

20. Woods Point

- County access road needs to be upgraded.
- The existing boat launch ramp is in very poor condition and should be upgraded, and the parking area should be expanded.
- This area is the only swimming access in the vicinity.
- Should preserve the camping use at this site.

— Area is used for hunting in November, which results in trash and litter problems.

D. Other General Public Comments

1. Lake Visitation Statistics

— Several workshop participants questioned the validity of historic visitation statistics. It was also noted that poor weather conditions or high water not only reduce visitation during the year it occurs but that it has a residual effect that reduces visitation the following year.

2. Public Use of Beach and Boat Launch Areas

— Expressed desire to keep launch lanes and swimming beaches open to the general public without use fees. Areas that were mentioned specifically included Cranfield, Bidwell Point and Robinson Point.

3. Tourism

— Expressed concern that closure of proposed areas to day use and closure of small camp areas will reduce the number of visitors to the lake and have a negative impact on the local economy.

4. Day Use/Camping Conflicts

— Expressed opinion that current mixing of day use and overnight visitation does not cause public use problems or conflicts.

5. Boat Launch Lanes

— Additional boat launch ramps are needed at many locations on the lake to meet current demands. Specific sites that were mentioned included area near Route 101, Tracy, Buzzard Roost.

— One participant felt that the single most critical need at the project was for additional boat launch lanes and expanded parking areas.

6. Camping Areas

— Camp pads should be "long and level" with electric hookups and additional fresh water hose hookup points.

— Camping areas should be located near the water. Ridgetop site should be avoided.

7. Secondary Access Points

— Secondary boat access points should be provided with well maintained toilet facilities.

ADVANCE NOTICE
PUBLIC INFORMATION MEETING

NORFORK LAKE MASTER PLAN

Harland Bartholomew & Associates Inc. is currently under contract with the Little Rock District, Corps of Engineers to prepare an updated master plan for the Norfork Lake project. A draft plan was presented at a workshop in Mountain Home on February 23, 1987. Public interests expressed at that meeting were analyzed and the plan revised. Copies of the plan may be reviewed at the Mountain Home Resident Office at 324 West 7th Street in Mountain Home, Arkansas.

The plan provides general recommendations about the future development, operation and management of each Corps of Engineer operated public recreation area at Norfork Lake. The meeting is scheduled to discuss plan recommendations.

DATE: Tuesday, September 15, 1987

TIME: 7:00 p.m.

PLACE: Knights of Columbus Hall
Highway 201 North, Mountain Home, Arkansas

PROPOSED AGENDA

NORFORK MASTER PLAN UPDATE MEETING

WELCOME

PURPOSE OF UPDATE

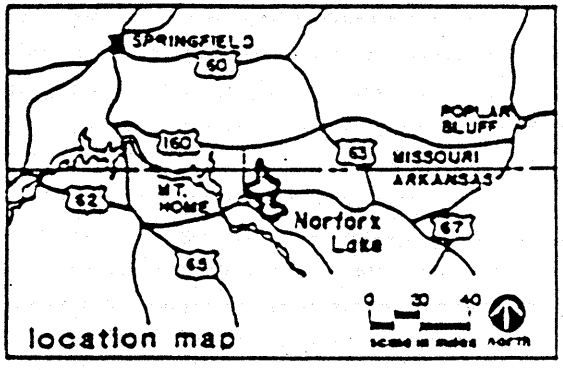
STATUS OF UPDATE

- PRELIMINARY DRAFT BY HARLAND BARTHOLOMEW ARCHITECT ENGINEERING FIRM
- WORKSHOP AT MT. HOME ON PRELIM DRAFT PLAN, FEBRUARY 17, 1987
- CORPS & AE REVIEWED PUBLIC COMMENTS & AGREE ON REVISIONS
- PLAN PRESENTED TONIGHT IS THAT REVISED PLAN
- CORPS WILL INCORPORATE INFORMATION OBTAINED AT THE MEETING AND SUBMIT REVISED REPORT TO HIGHER HEADQUARTERS FOR REVIEW
- AS FEDERAL FUNDS ARE AVAILABLE ADDITIONAL FACILITIES WILL BE SCHEDULED FOR CONSTRUCTION

SUMMARY OF COMMENTS

SUMMARY OF PLAN

CONCLUSION



INTRODUCTION

Norfork Lake was selected through a pilot study to have its master plan revised, and an Architect Engineer (AE) firm, Harland Bartholomew & Associates Inc., was selected and notified. A preliminary draft plan was received by the Little Rock District (LRD) on February 17, 1987, and a public workshop was conducted on February 23, 1987. The preliminary draft and the public comments from the February 23 workshop were reviewed by district personnel. Based on this review and ideas expressed and comments made at the public meeting, the AE was provided direction for incorporation into the plan. The final draft was submitted by the AE on June 10, 1987, and is currently being reviewed by various district elements. The Norfork Master Plan update consists primarily of consolidation and improvement of parks. There are no land use changes or deletions or additions of acres of developed park lands. No parks will be closed. Facility changes and individual park changes are listed on the following pages of this brochure.

Day Use Changes - The existing park development does not offer separate areas for day users and campers. The Corps is making a Corps-wide effort to separate these uses to avoid conflicts between the user groups, site overuse and to allow more efficient control. Eight of the parks will have separate day use areas.

Camping Changes - There will be an increase in the total number of sites from 509 to 604 and improvements on 236 sites. Camping will be relocated from 4 parks which have low demand and are inefficient in size (5-12 sites per park).

Launch Facilities - The plan calls for relocation of some launch lanes, widening and improving others and provision of 5 additional lanes on the lake.

Parking Facilities - Several comments were made at the workshop concerning the need for additional parking in the parks. Consequently, several parking areas were expanded and high-water parking areas proposed.

Individual Park Analysis

Bidwell - The park has 48 existing campsites and the plan adds 5 campsites. Eleven sites will be restored.

Buzzard Roost - The park is primarily an access point. The campsite remnants will be cleaned up and the area re-landscaped. The existing parking lot will be paved and one additional launch lane provided. The park also has a marina.

Cranfield - There are 74 campsites; 54 of them will be restored and 2 sites added. Existing day use has been retained in the plan with a slight increase in picnic sites. Day users and campers will be separated. High water parking will be provided. There is also a marina in the park.

Curley Point - This is an access only area. The public complained about the litter problem due to uncontrolled use of old table remnants. Removing these remnants is part of the plan. The remoteness and low demand do not warrant major improvements at the park, although the launch facilities will be improved.

Gamaliel - There are 28 existing camp units, all to be restored and 36 sites will be added. There will also be a few additional picnic sites. Day users and campers will be separated. One additional launch lane and high water parking will be provided. There were no public comments on this site.

Georges Cove - Ten of the 12 campsites will be restored and the number of sites increased to 32. Day use and camping areas will be separated, and a new shelter and several picnic sites will be added. One additional launch lane is included. There were no public comments on this park.

Hand - The area is an access point only. The public requested improved parking and the plan has been revised to add parking.

Henderson - The park has 38 campsites which are periodically unavailable due to high water blocking the access road. The road will be raised and the launch complex relocated to offer more dependable service.

Howard Cove - This remote park has 12 existing campsites and a marina. Because of low demand, the sites were proposed to be removed. Due to public

comment, the marina operator will be given the option to lease, operate and maintain the site.

Jordon - There are 38 campsites existing. Seventeen will be restored and 14 new sites added. There will be a separation of day use and camping facilities and additional picnic sites provided. There is a marina in the park.

Panther Bay - Seven of the 28 existing campsites will be relocated to the day use area, and 7 sites would be restored. A major day use area will be developed with a swim beach, changehouse, pavilions and picnic sites. A poorly located launch lane will be removed, leaving 6 lanes. There is a marina in the park.

Pigeon Creek - The small 5 unit campground will be converted to day use with several additional picnic sites, a pavilion and a swim beach.

Quarry Cove - The 80 campsites will be maintained. The few campsites in the day use area will be relocated up on the hill and in the downstream part of the park. The day use area will be expanded and separated from the camping areas. A high water parking area will be provided. There is a marina in the park. No public comments were received on this park.

Red Bank - The park is not suitable for major expansion so it will be converted to access only. Maintenance on the campsites will be reduced and when they become unserviceable, they will be removed. A high water parking area will be added and launch lanes improved.

Robinson Point - This camping area will be increased from 102 to 119 sites. Eighty four sites will be restored. One additional launch lane and high water parking will be provided. There were no public comments on the plan.

Talbert - The park is lake access only and the plan is to improve the launch facilities and maintain the area as lake access.

Tecumseh - This small 7 unit camp area will be expanded to 19 units and a few day use sites added. There were no public comments on the plan.

Tracy - Maintenance on the 7 campsites will be reduced and when they become unserviceable they will be removed and the area maintained as lake access and marina use only. In response to public comment, the parking facilities will be expanded.

Udall - The 7 existing campsites will be restored and 13 new sites added. There were no public comments.

Woods Point - The camping area will be increased from 11 to 30 sites and a day use area established. As a result of public comment, a new swim beach will be provided and launch facilities and parking upgraded.

ATTACHMENT B

NORFORK LAKE LAND USE PLAN

ATTACHMENT B

NORFORK LAKE LAND USE PLAN

The Land Use Plan for Norfork Lake was not updated as part of this Master Plan. The existing Land Use Plan (prepared in 1972) is still valid and will be used until such time as it is determined that a major land use update is required. The following general items should be considered when the plan is updated:

1. Project Operations. The 1972 Norfork Lake Land Use Plan allocated approximately 33,144 acres of land for Project Operations. These lands are required for authorized project purposes including flood control and hydroelectric power generation. Included in this allocation are all lands below the top of flood control pool elevation 580, and all islands and steep bluff areas. This allocation is compatible with guidance provided in Draft ER 1130-2-435, and the provisions of the 1987 Master Plan update for Norfork Lake.

2. Recreation-Intensive Use. The 1972 Land Use Plan allocated approximately 7,870 acres of land in 25 sites for Recreation-Intensive Use. Draft ER 1130-2-435 defines Recreation-Intensive lands as those areas "acquired for project operations and developed or planned for intensive recreational activities by the visiting public, including developed recreation areas and areas for concession, resort and quasi-public development."

The 1987 Norfork Lake Master Plan identifies 20 existing public recreation areas (5,850 acres) and four proposed areas (1,855 acres) for a total of approximately 7,705 acres of land. The updated Land Use Plan should generally limit designation of Recreation-Intensive Use to these areas.

3. Recreation-Low Density. The 1972 plan allocated approximately 7,600 acres of land to the Recreation-Low Density Category. Draft ER 1130-2-435 defines this category as "land acquired for project operations and managed primarily for low density recreation activities . . . " (such as hiking, primitive camping, hunting, etc.).

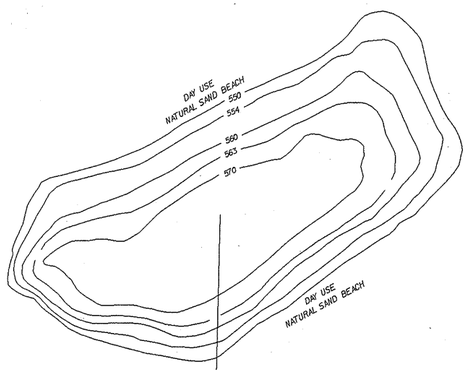
When the 1972 Land Use Plan is updated, the areas previously allocated to Recreation-Low Density should be studied to determine their highest and best use with consideration of relocating a significant portion of this land area to the "Forest Management" or "Wildlife Management-General" categories as defined in ER 1130-2-435. A shift of some of this land area from Recreation-Low Density to Wildlife or Forest Management may result in a more accurate designation of land use, and provide the potential to license portions of this land to other agencies, particularly for wildlife management activities.

4. Recreation Group Use. The 1972 Norfork Lake Master Plan allocated 14 sites including approximately 747 acres of land to a Recreation Group Use category. These lands are generally no longer managed for exclusive group use in recognition of changing public needs and Corps of Engineers policy. Therefore, these lands should be further evaluated and allocated to a more appropriate category such as Recreation-Low Density, Wildlife Management or Forest Management.

5. Natural Areas. The 1972 plan allocated approximately 4,950 acres of land to this category, primarily at the upper reaches of Brushy Creek, Big Creek and Bennetts Creek. Draft ER 1130-2-435 defines a "natural area" as "land managed to protect rare and endangered species of flora or fauna." Therefore, this designation is probably not appropriate for the 4,950 acres mentioned above. However, Draft ER 1130-2-435 does allow for "environmentally-sensitive areas" which are defined as "land acquired for project operations and managed for preservation of scientific, ecological, cultural or aesthetic values." Based on the limited natural resource data collected during this planning effort, and the relatively remote character of the areas previously classified as "natural areas," it may be appropriate to simply convert these lands to the "Environmentally Sensitive Area" designation. However, other similar areas should also be evaluated and the designation should be applied on the basis of clearly defined criteria and objectives.

EXISTING FACILITIES

- 31 CLASS B CAMP UNITS
- 7 PRIMITIVE TENT UNITS
- 1-6 UNIT PICNIC SHELTER
- 3 VAULT TOILETS
- SWIMMING BEACH
- MARINA
- 1-2 LANE LAUNCH RAMP
- MINOR ENTRANCE STATION
- TRAILER SANITARY STATION



T.19 N.

R. 11 W.

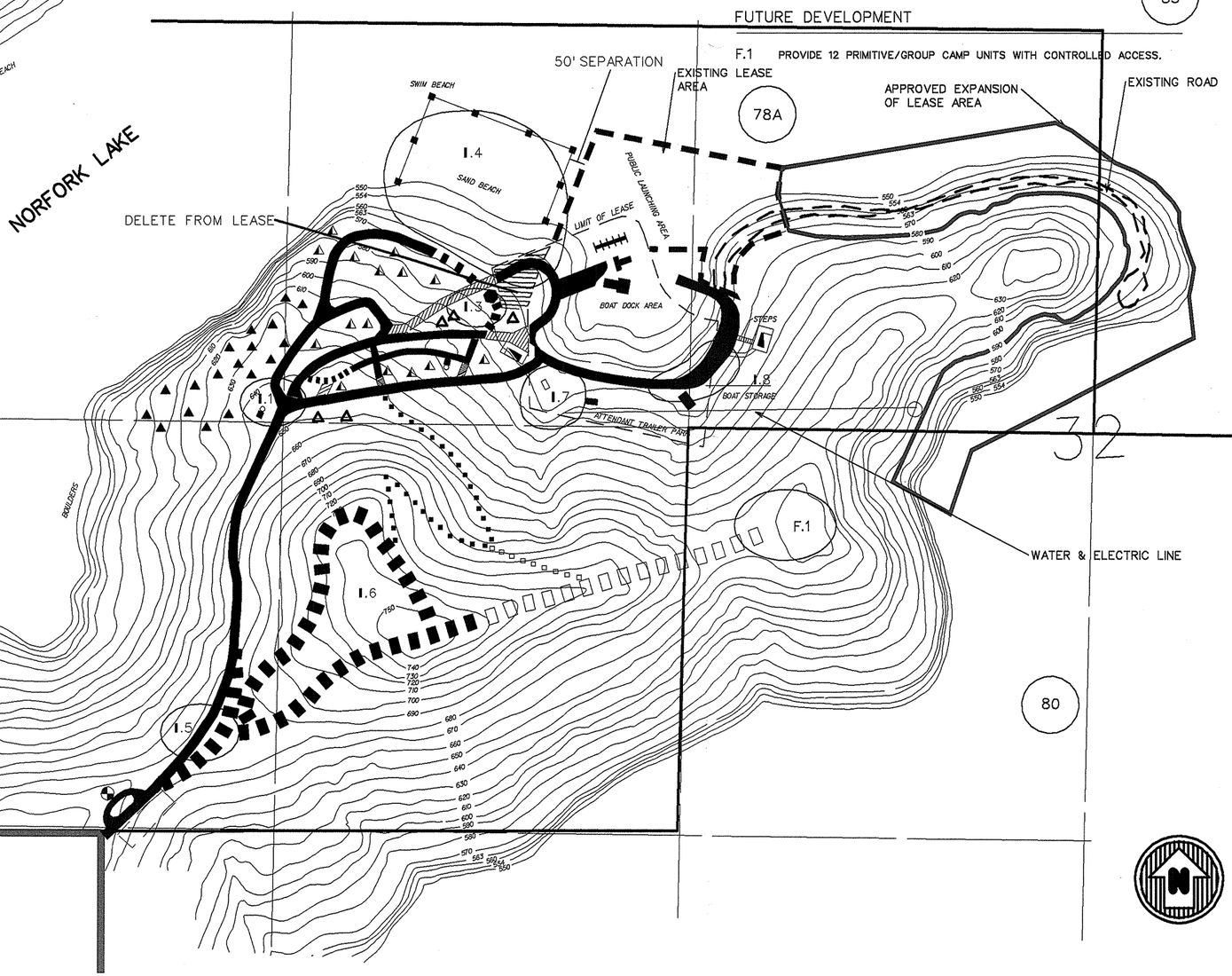
FIVE YEAR INITIAL DEVELOPMENT PLAN

I.1 SEPARATE AND DEFINE CAMPING ACTIVITIES FROM MARINA AND DAY USE AREAS. OBLITERATE AND LANDSCAPE VACATED ROADS. (////)
I.2 RELCOATE 5 CAMP UNITS, RESTORE 17 CAMP UNITS (SEE SYMBOL'S △◭).
I.3 RELOCATE EXISTING PICNIC SHELTER TO PANTHER BAY PARK.
I.4 EXPAND DAY USE FACILITIES -
PROVIDE ADDITIONAL PARKING.
PROVIDE 5 PICNIC UNITS FOR DAY-USERS.
UPGRADE BEACH.
I.5 PROVIDE A MAJOR ENTRANCE STATION.
I.6 PROVIDE 19 CLASS B+ CAMP UNITS (5 RELOCATED, 7 FROM PANTHER BAY, 7 NEW).
I.7 PROVIDE SHOWER FACILITIES TO UPGRADE PARK TO B+.
I.8 EXPAND AND STRIPE BOAT LAUNCHING PARKING AREA.

85

FUTURE DEVELOPMENT

F.1 PROVIDE 12 PRIMITIVE/GROUP CAMP UNITS WITH CONTROLLED ACCESS.



LEGEND

EXISTING CONDITIONS

NATURAL FEATURES

TOP OF CONSERVATION POOL ELEV. 554	NOT INDICATED
MAXIMUM SEASONAL POOL ELEV. 555 (APRIL TO SEPTEMBER)	- - - - - - -
5 YEAR FLOOD ELEV. 563	
TOP OF FLOOD CONTROL POOL ELEV. 580	
50 YEAR FLOOD ELEV. 580.5	
EXISTING VEGETATION	
PARK BOUNDARIES	

ROADS

PAVED	
GRAVEL	

RECREATIONAL FACILITIES

VAULT TOILET	
RESTROOMS-WATER BORNE	
CHANGE HOUSE	
ENTRANCE STATION	
PICNIC SHELTER	
GATE	
TRAIL	
SWIMMING BEACH	BEACH
WELL	
MARINA/TRAILER SANITARY STATION	
PLAYGROUND	

FIVE YEAR INITIAL DEVELOPMENT

PROPOSED IMPROVEMENTS	I.1
ROADS	
TRAILS	
EXISTING CAMPS UNITS TO REMAIN	▲
EXISTING CAMP UNITS TO BE RESTORED	◭
EXISTING CAMP UNITS TO BE REMOVED	△

FUTURE DEVELOPMENT

PROPOSED IMPROVEMENTS	F.1
ROADS	
TRAILS	

200 0 100 200 400 800

UPDATED MASTER PLAN
NORFORK LAKE
JORDAN PARK
DEVELOPMENT PLAN

WHITE RIVER WATERSHED
NORTH FORK RIVER
ARKANSAS & MISSOURI

EXPANDED LEASE AREA

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK ARKANSAS

DATE: REVISED NOVEMBER 2005
FILENAME: PLATE 6-13B.dgn
EXHIBIT "A"

Norfork Lake
State: Arkansas
County: Baxter

Owner: United States of America
Tract Nos. 85, 78A and 80
Acres: 25.90

EXISTING LEASE AREA

A parcel of land designated as the Jordan Boat Dock lease site, situate in the W½ of Section 32, Township 19 North, Range 11 West of the Fifth Principal Meridian, Baxter County, Arkansas, and containing 12.10 acres, more or less, of which 4.76 acres lie above elevation 554 feet, National Geodetic Vertical Datum.

EXPANSION TO LEASE AREA

A tract of land lying within the S½ of the N½ and that part of the NE¼ of the NE¼ of the SE¼ of Section 32, County of Baxter, State of Arkansas, Township 19 North, Range 11 West of the Fifth Principal Meridian, and containing 13.80 acres, more or less, as shown in Exhibit A.

The above-described areas contain 25.90 acres, more or less.

CESWL-OP-ON

MEMORANDUM THRU Chief, Operations Division
FOR Operations Manager, Mountain Home

FEB 16 2005

SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E, Supplement No. 10

1. Reference: Request for Marina Expansion, DACW03-1-95-664, Norfork Lake

2. Supplement No. 10 to the subject master plan is approved. The action makes available lands in Jordan Park for use by the commercial concessionaire for additional boat storage space and vehicular access to the lease expansion area. Approximately 12.50 acres will be added to the lease site for a total area of 24.60 acres. The concessionaire prepared an Environmental Assessment of the requested additional lands under the general guidance of the Chief, Planning, Environmental and Regulatory. The affected areas are indicated on the enclosed amended master plan plate 6-13b.

3. A copy of this supplement is provided to CECW-CO (w/encl); CESWD-PDS-O/encl); Chief, Real Estate Division (w/encl); Chief, Planning, Environmental and Regulatory (w/encl); Bull Shoals Master Plan (w/encl); Files (w/encl); and Log Book (w/encl).

WALLY Z. WALTERS
Colonel, US Army
District Engineer

EXISTING FACILITIES

- 31 CLASS B CAMP UNITS
- 7 PRIMITIVE TENT UNITS
- 1-6 UNIT PICNIC SHELTER
- 3 VAULT TOILETS
- SWIMMING BEACH
- MARINA
- 1-2 LANE LAUNCH RAMP
- MINOR ENTRANCE STATION
- TRAILER SANITARY STATION

T.19 N.

FIVE YEAR INITIAL DEVELOPMENT PLAN

I.1 SEPARATE AND DEFINE CAMPING ACTIVITIES FROM MARINA AND DAY USE AREAS. OBLITERATE AND LANDSCAPE VACATED ROADS. (////)
I.2 RELCOATE 5 CAMP UNITS, RESTORE 17 CAMP UNITS (SEE SYMBOL'S △▲).
I.3 RELOCATE EXISTING PICNIC SHELTER TO PANTHER BAY PARK.
I.4 EXPAND DAY USE FACILITIES -
PROVIDE ADDITIONAL PARKING.
PROVIDE 5 PICNIC UNITS FOR DAY-USERS.
UPGRADE BEACH.
I.5 PROVIDE A MAJOR ENTRANCE STATION.
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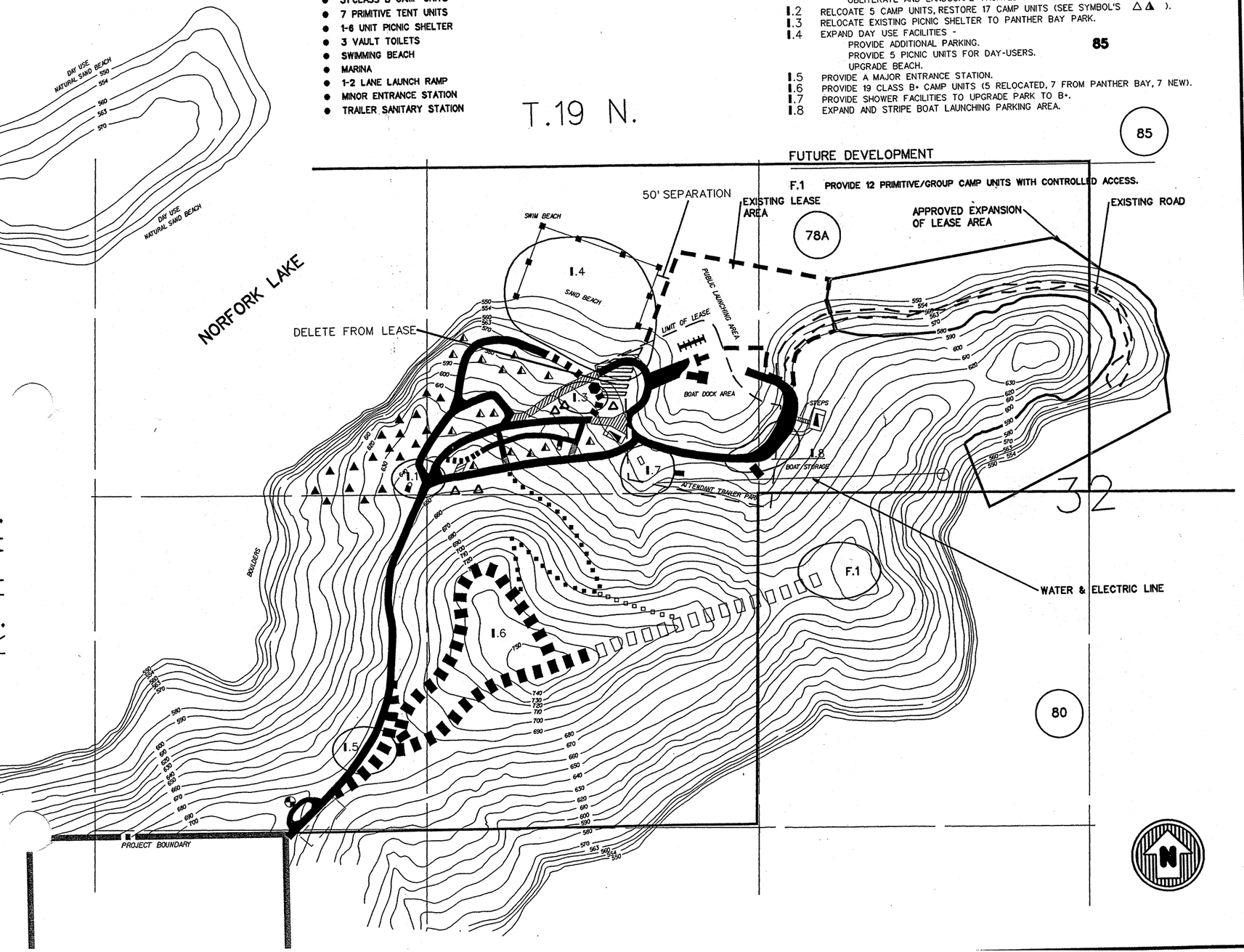
I.7 PROVIDE SHOWER FACILITIES TO UPGRADE PARK TO B+.
I.8 EXPAND AND STRIPE BOAT LAUNCHING PARKING AREA.

85

FUTURE DEVELOPMENT

F.1 PROVIDE 12 PRIMITIVE/GROUP CAMP UNITS WITH CONTROLLED ACCESS.



LEGEND

EXISTING CONDITIONS

NATURAL FEATURES

TOP OF CONSERVATION POOL ELEV. 554	NOT INDICATED
MAXIMUM SEASONAL POOL ELEV. 555 (APRIL TO SEPTEMBER)	
5 YEAR FLOOD ELEV. 563	
TOP OF FLOOD CONTROL POOL ELEV. 580	
50 YEAR FLOOD ELEV. 580.5	
EXISTING VEGETATION	
PARK BOUNDARIES	

ROADS

PAVED	
GRAVEL	

RECREATIONAL FACILITIES

VAULT TOILET	
RESTROOMS-WATER BORNE	
CHANGE HOUSE	
ENTRANCE STATION	
PICNIC SHELTER	
GATE	
TRAIL	
SWIMMING BEACH	BEACH
WELL	
MARINA/TRAILER SANITARY STATION	
PLAYGROUND	

FIVE YEAR INITIAL DEVELOPMENT

PROPOSED IMPROVEMENTS	I.1
ROADS	
TRAILS	
EXISTING CAMPS UNITS TO REMAIN	▲
EXISTING CAMP UNITS TO BE RESTORED	▲
EXISTING CAMP UNITS TO BE REMOVED	△

FUTURE DEVELOPMENT

PROPOSED IMPROVEMENTS	F.1
ROADS	
TRAILS	

200 0 100 200 400 800

UPDATED MASTER PLAN
NORFORK LAKE
JORDAN PARK DEVELOPMENT PLAN

WHITE RIVER WATERSHED
NORTH FORK RIVER
ARKANSAS & MISSOURI

EXPANDED LEASE AREA

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK ARKANSAS

DATE: REVISED APRIL 2004
FILENAME: PLATE 6-13B.dgn

EXHIBIT "A", PAGE 1

CESWL-OP-ON (CESWL-MH/17 Mar 99) (1130) 1st End Johnson/tm/5674
SUBJECT: Request for Lease Area Expansion, Cranfield Marina, DACW03-1-93-406

District Engineer

16 APR 1999

THRU Chief, Operations Division

FOR Operations Manager, Mountain Home Project Office

1. Supplement No. 9, Norfork Lake, Updated Master Plan, D. M. No. 1-E, is approved. This action will provide a 5.6-acre expansion to the existing marina lease area and an additional 2.8-acre parcel for commercial concession use. The expansion lease area limits are as indicated on the enclosed Plate 17.

2. Cranfield Park is designated as a "A" class park. The developed park consists of 67 camping units with electrical outlets, restrooms, boat launching ramp, swim beach, entrance complex, and sanitary dump station. Recreation visitor hours in FY 98 totaled 2,134,100.

SIGNED

2 Encls
1 nc
Added 1 encl
2.

THOMAS A. HOLDEN JR.
Colonel, Corps of Engineers
District Engineer

Copy Furnished:
CECW-ON
CESWD-ETO-R
Chief, Real Estate Division
Chief, General Engineering Section
Chief, Hydrology & Hydraulics Branch
Chief, Environmental Analysis Branch
Chief, Geotechnical Branch
Norfork Lake Master Plan
Log Book

CESWL-MH MILHOLLAND/lj/425-2700/17 Mar 99

MEMORANDUM THRU Chief, Operations Division 3/25
FOR Chief, Real Estate Division

Subject: Request for Lease Area Expansion, Cranfield Marina
DACW03-1-93-406

1. Attached is a request from Mr. Robert Grace to expand the lease area for Cranfield Dock.

2. Recommend favorable consideration of Mr. Grace's request.

Encls
as

MARK A. MILHOLLAND
Operations Manager

CRANFIELD
DOCK
Bob & Kathy Grace
2028 Cranfield Rd.
Mountain Home, Ar. 72653-7656

February 19, 1999

US Army Corp of Engineers
Lake Norfork Operations Mgr.
Mark Milhollen

Dear Sir,

Over the last four years we have added over 50 larg covered stalls. In the last 2 years we have turned away at least 50 families who wanted covered stalls. People don't want to put their new, expensive boats in the lake without covered stalls.

In an effort to meet this need, we are requesting the enclosed lease expansion. We would like to put 2 docks (excluding a water-break dock) and a smaller dock for temporary rental for the campers.

Your consideration in this matter is appreciated.

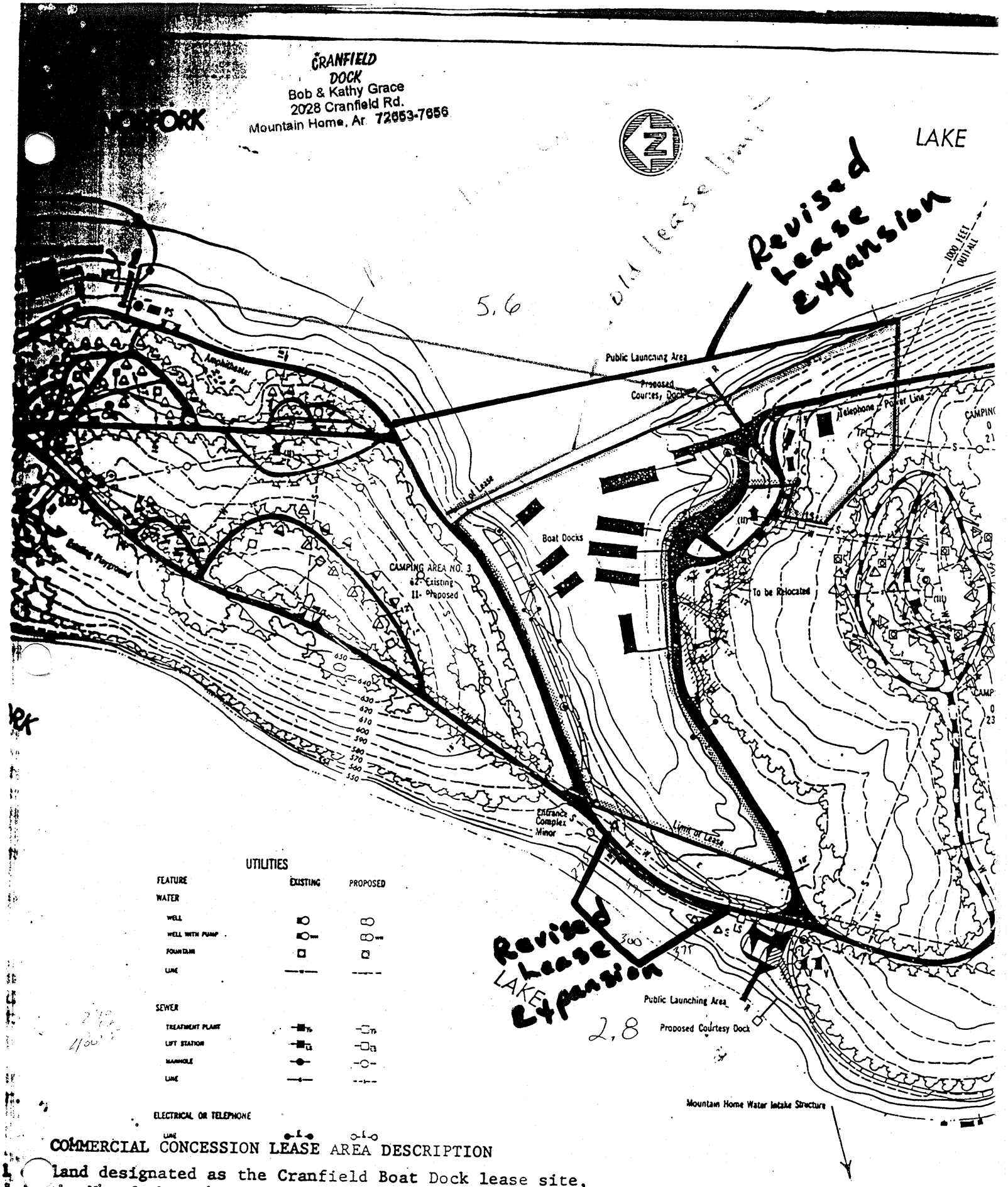
Sincerely,

Robert D. Grace

Robert D. Grace - Pres.

Kathryn Grace

Kathryn Grace - Sec. Treas

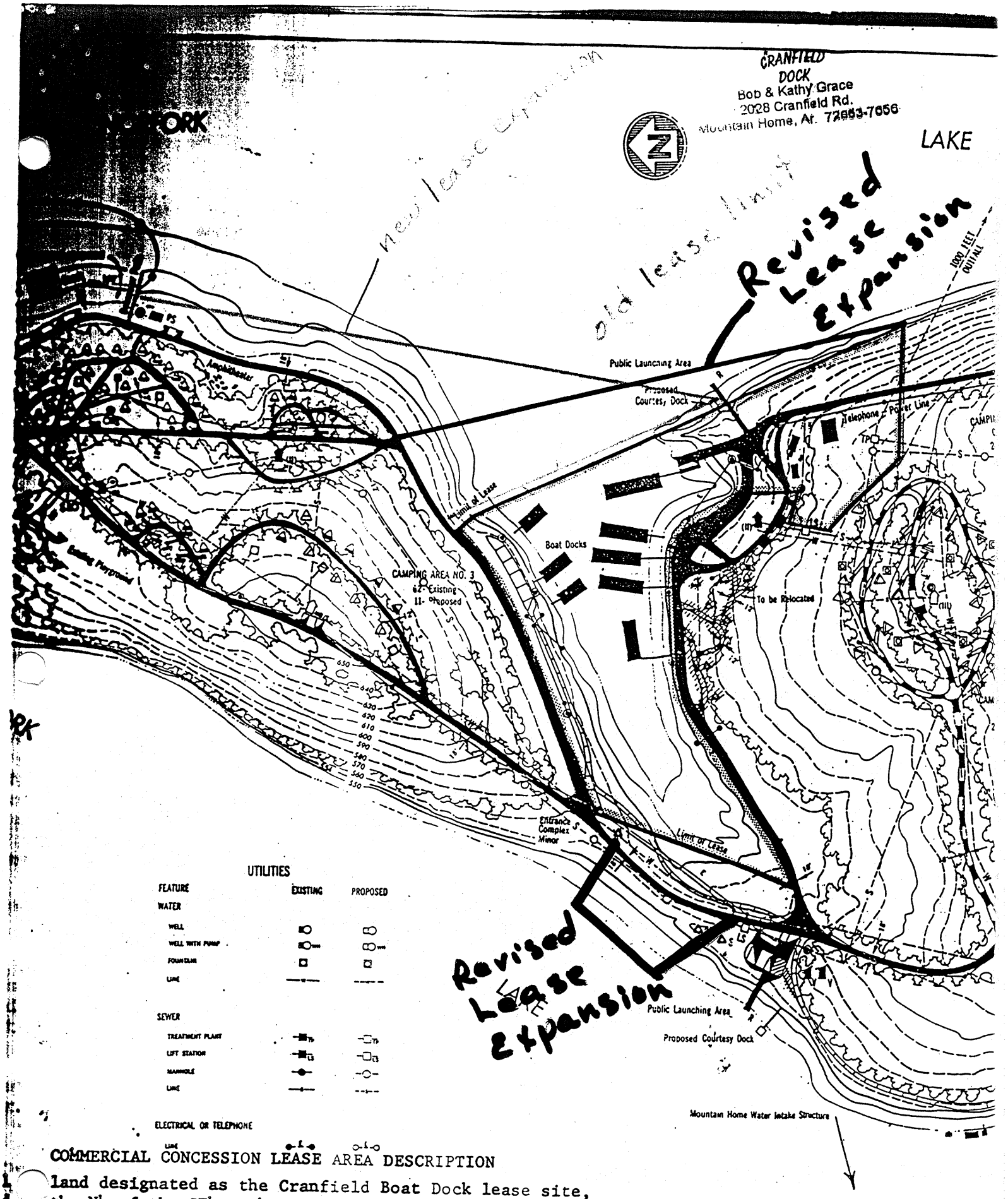


UTILITIES

FEATURE	EXISTING	PROPOSED
WATER		
WELL		
WELL WITH PUMP		
FOUNTAIN		
LINE		
SEWER		
TREATMENT PLANT		
LIFT STATION		
MANHOLE		
LINE		
ELECTRICAL OR TELEPHONE		
LINE		

COMMERCIAL CONCESSION LEASE AREA DESCRIPTION

land designated as the Cranfield Boat Dock lease site, in the N½ of the SE¼, SE¼ of the SW¼ NE¼ and the N½ NW¼ SE¼ ion 13, Township 20 North, Range 13 West of the 5th Principal a, Baxter County, Arkansas, and containing 21.7 acres, more or f which 9.7 acres lie above elevation 554', National Geodetic l Datum.



COMMERCIAL CONCESSION LEASE AREA DESCRIPTION

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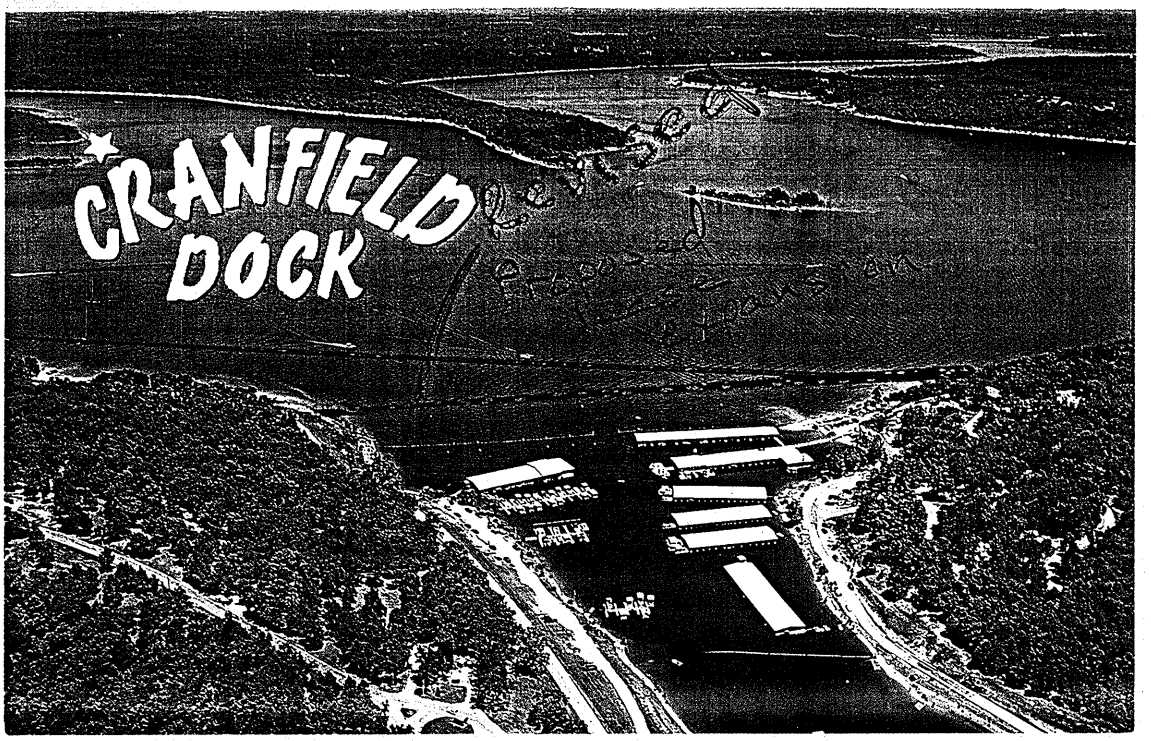
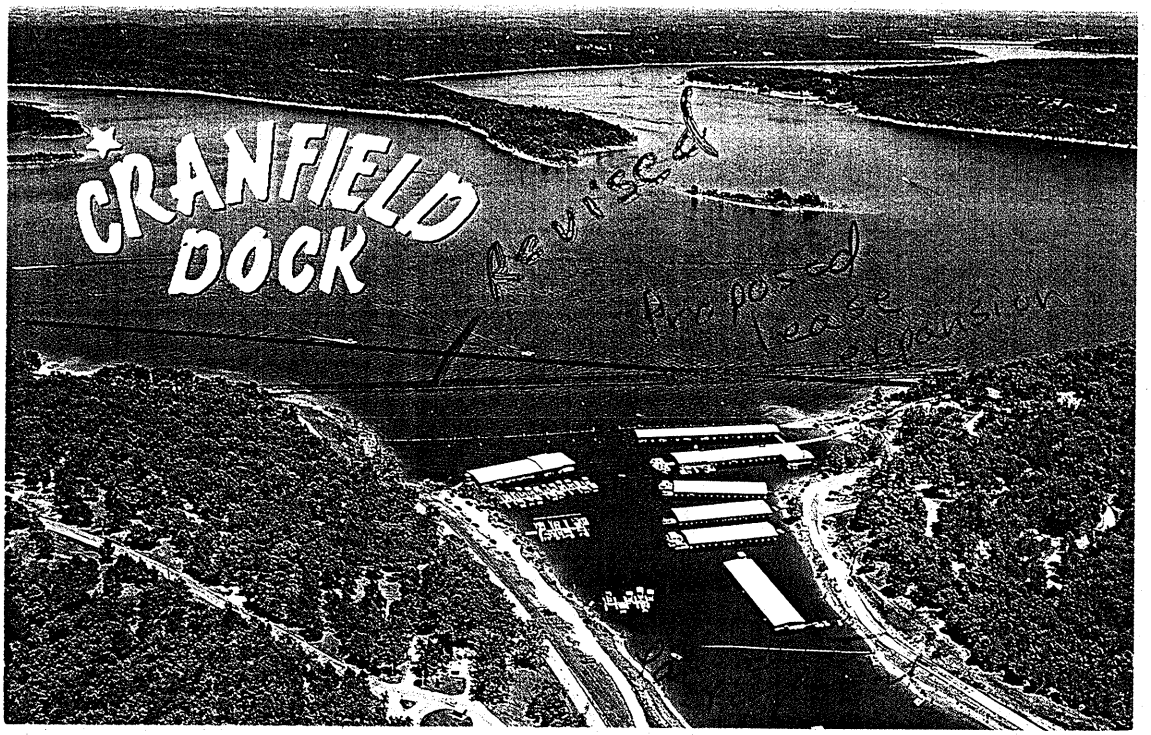

CRANFIELD
DOCK


CRANFIELD
DOCK

CESWL-CO-ON

08 DEC 1997

MEMORANDUM THRU Chief, Construction-Operations Division

FOR Chief, Real Estate Division

SUBJECT: Master Plan Supplement

1. Reference memorandum, CESWL-PL-A, 12 November 1997, subject: Report of Availability (ROA) - Part B including EA and FONSI, Point Return Park (Encl 1).

2. Supplement No. 8 to the Norfork Lake Master Plan is approved, making Buzzard Roost Park available for leasing to the commercial concessionaire. Expanded lease limits are shown on the enclosed sheet (Encl 2).

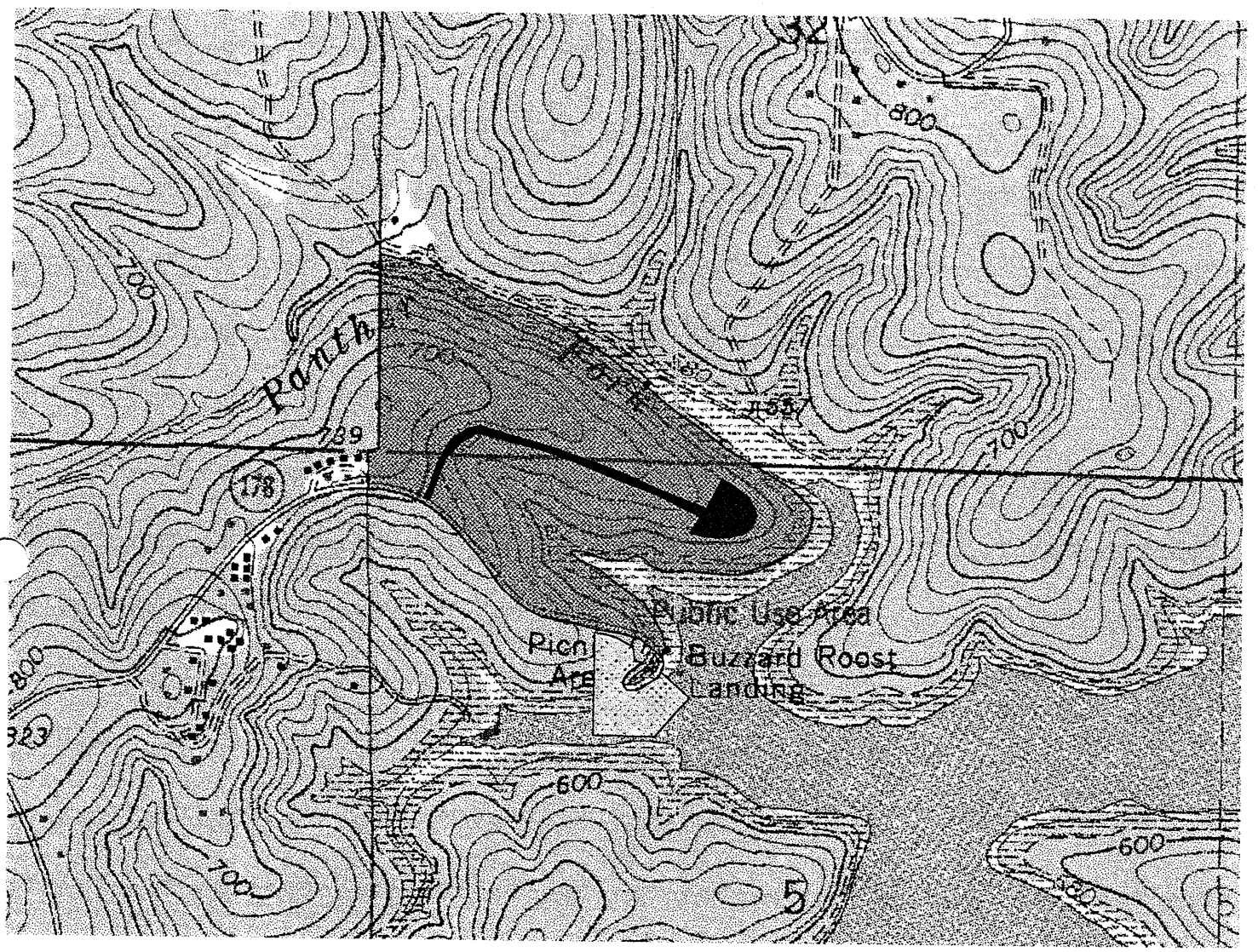
SIGNED

2 Encls

P. S. MORRIS
Colonel, Corps of Engineers
District Engineer

Copy Furnished:
CECW-ON (w/encl 2)
CESWD-ETO-R (w/encl 2)
Oper Proj Mgr, Mountain Home PO (w/encl 2)
Chief, General Engineering Section (w/encl 2)
Chief, Hydrology & Hydraulics Branch (w/encl 2)
Chief, Environmental Analysis Branch (w/encl 2)
Chief, Geotechnical Branch (w/encl 2)
Norfork Lake Master Plan (w/encl 2)
Log Book (w/encl 2)

Buzzard Roost Proposed Lease November 1997



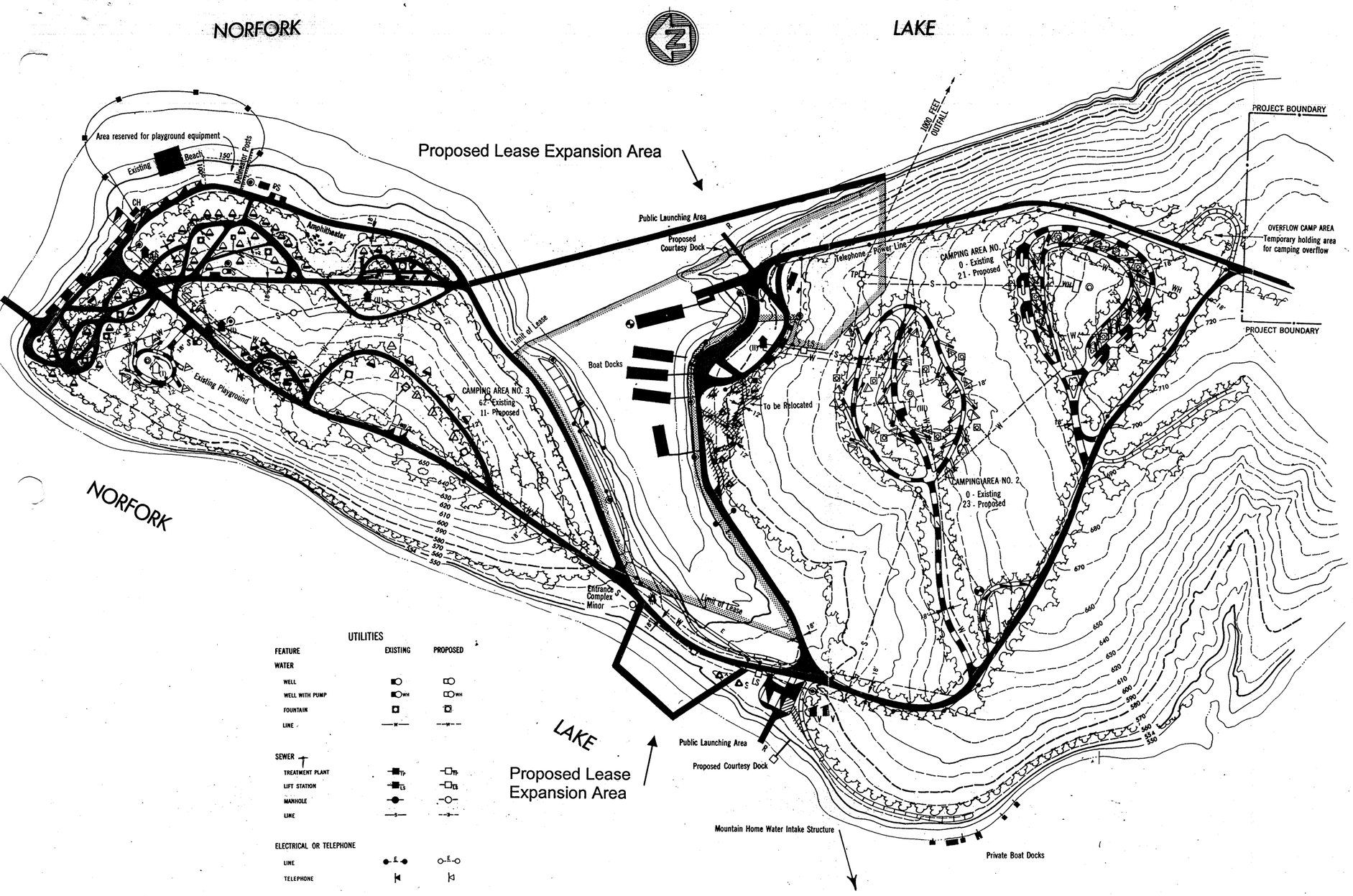
Buzzard Roost Landing
Proposed New Lease
Existing Lease
Proposed Road & Parking Area

N
W E
S

Produced by:
Little Rock District
U. S. Army Corps of Engineers
November 1997
USGS DRG: UTM, Nad27, Zone 15, Scale 1:24000
Leases Digitized from DRG, Mountain Home East

1000 0 1000 Feet

Scale 1" - 1000'
1:12000



UTILITIES

FEATURE	EXISTING	PROPOSED
WATER		
WELL		
WELL WITH PUMP	WH	WH
FOUNTAIN		
LINE	W	W
SEWER		
TREATMENT PLANT	TP	TP
LIFT STATION	LS	LS
MANHOLE		
LINE	S	S
ELECTRICAL OR TELEPHONE		
LINE	E	E
TELEPHONE		

LEGEND

RECREATIONAL FEATURES

FEATURE	EXISTING	PROPOSED
ROADS		
PAVED		
GRAVEL		
EXISTING GRAVEL TO BE PAVED		
TO BE REMOVED		
REST ROOMS - VAULT TYPE, WOODEN		
REST ROOMS - VAULT TYPE, MASONRY		
TYPE I	I	I
TYPE II (CONVERTIBLE TO WATERBORNE)	II	II
TYPE III (CONVERTIBLE TO WATERBORNE WITH SHOWERS)	III	III
REST ROOMS - WATER BORNE	WB	WB
REST ROOMS - WATER BORNE WITH SHOWERS	WB/S	WB/S
TRAILER/MARINE - SANITARY STATION		
BOAT RAMP	R	R
COURTESY DOCK	CD	CD
PICNIC SHELTER	PS	PS
CHANGE HOUSE	CH	CH
CAMPERS WASH HOUSE	CWH	CWH
OTHER BUILDINGS (NAMED)	CAFE	CAFE
TELEPHONE		
PICNIC SPACE		
CAMP SPACE OR TRAILER SPACE		
GROUP CAMP SPACE AND TRAIL		
1 COUNCIL FIREPLACE		
1 REFUSE CAN		
WELL, OR TABLE CANOPY	S	S
GATE		
OTHER FEATURES		
BEACH IMPROVEMENT	BEACH	BEACH
TREES		
TRAFFIC COUNTER	TC	TC
MERCURY VAPOR LIGHT		
TRAIL		

PERTINENT ELEVATION (MSL)

TOP OF FLOOD CONTROL POOL, EL. 580	
TOP OF CONSERVATION POOL, EL. 554 (APRIL TO SEPT.)	

NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 20 N, R 13 W, SEC. 13, 19 & 24

WHITE RIVER WATERSHED NORTH FORK RIVER, ARK. AND MO.

UPDATED MASTER RECREATION PLAN

NORFORK LAKE

CRANFIELD PARK

SCALE OF FEET

200 0 200 400

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, DECEMBER 1972
REVISED OCTOBER 1999

PLATE 17

CESWD-ETO-R (CESWL-CO-ON 13 Jan 97) (1130) 1st End Mr. McCauley / wm/ 7-2434
SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E, Supplement No. 7

CDR, U. S. Army Engineer Division, Southwestern, 1114 Commerce Street,
Dallas, TX 75242-0216

7 FEB 1997

FOR Commander, Little Rock District, ATTN: CESWL-CO-ON

Approved.

FOR THE COMMANDER:

Encl wd

PAUL D. ROBINSON, P. E.
Director, Engineering and
Technical Services Directorate

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-CO-ON (1130) 13 January 1997

MEMORANDUM FOR Commander, Southwestern Division
ATTN: CESWD-ETO-R

SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E, Supplement No. 7

1. The purpose of this supplement is to reorganize the lease area and provide for a 3.89 acre lease expansion at Jordan Park, as shown on the enclosed Plate 6-13b. The concessionaire needs more water operations area when lake levels are below the conservation pool. The expansion area will also allow two new rental houseboats to be tethered to concessionaire mooring buoys. The 0.57 acre area to be deleted from the lease area is occupied by a group shelter and related facilities that are operated by the project. The new lease area is 11.34 acres.

2. Jordan Park is designated as a "B" park. The developed park consists of 38 camping units (33 with electrical outlets), restrooms, boat launching ramp, swim beach, entrance complex, and sanitary dump station. Recreation visitor hours in FY 96 totaled 1,017,579 hours.

3. Approval of this master plan supplement is recommended.

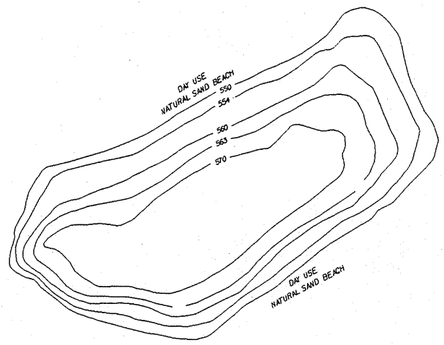
FOR THE COMMANDER:

Encl (4 cys)

for KEITH THONEN, P.E.
Chief, Construction-Operations
Division

EXISTING FACILITIES

- 31 CLASS B CAMP UNITS
- 7 PRIMITIVE TENT UNITS
- 1-6 UNIT PICNIC SHELTER
- 3 VAULT TOILETS
- SWIMMING BEACH
- MARINA
- 1-2 LANE LAUNCH RAMP
- MINOR ENTRANCE STATION
- TRAILER SANITARY STATION



FIVE YEAR INITIAL DEVELOPMENT PLAN

I.1 SEPARATE AND DEFINE CAMPING ACTIVITIES FROM MARINA AND DAY USE AREAS. OBLITERATE AND LANDSCAPE VACATED ROADS. ////

I.2 RELOCATE 5 CAMP UNITS, RESTORE 17 CAMP UNITS (SEE SYMBOL'S △◭).

I.3 RELOCATE EXISTING PICNIC SHELTER TO PANTHER BAY PARK.

I.4 EXPAND DAY USE FACILITIES -
- PROVIDE ADDITIONAL PARKING.
- PROVIDE 5 PICNIC UNITS FOR DAY-USERS.
- UPGRADE BEACH.

I.5 PROVIDE A MAJOR ENTRANCE STATION.

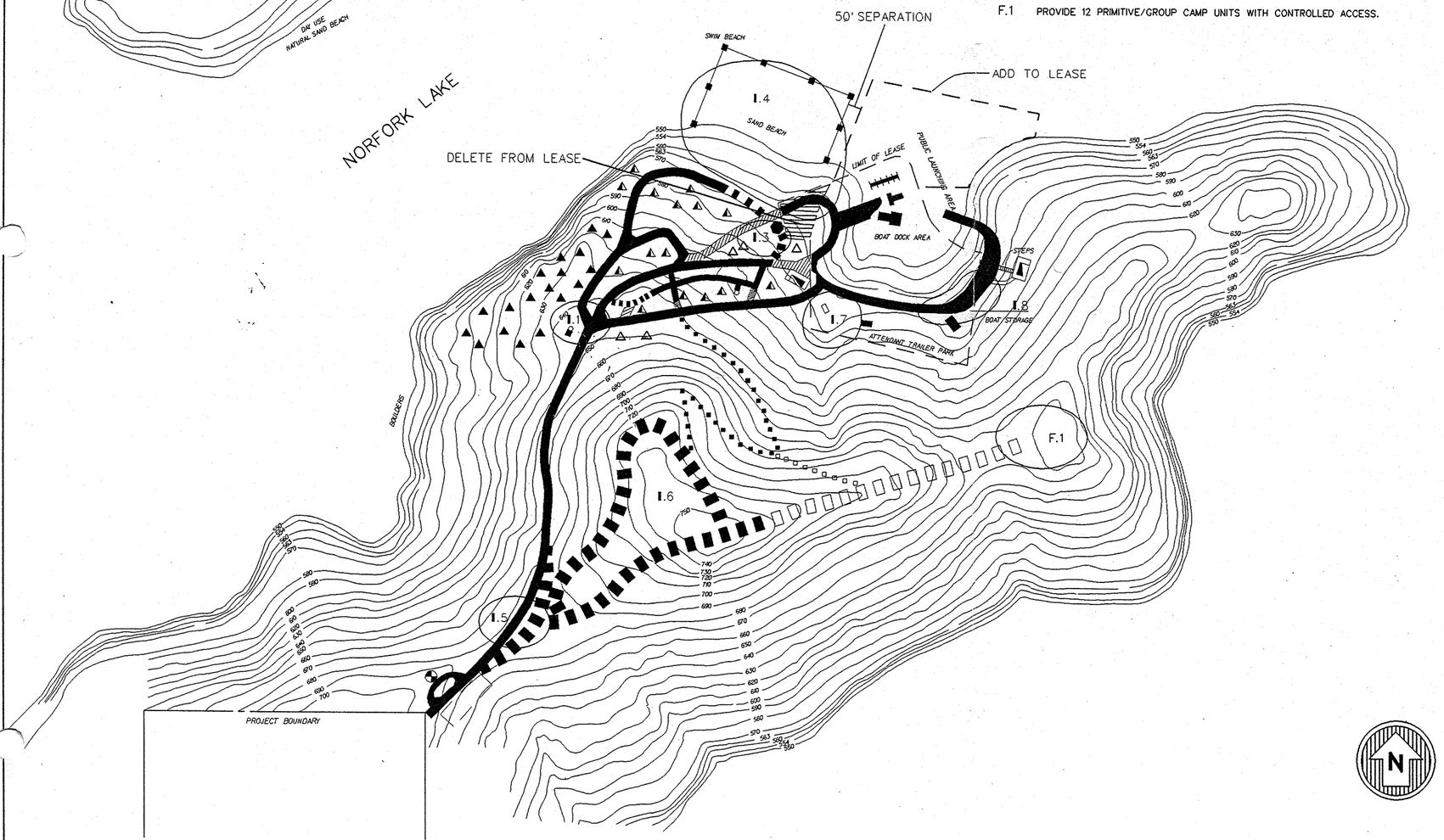
I.6 PROVIDE 19 CLASS B+ CAMP UNITS (5 RELOCATED, 7 FROM PANTHER BAY, 7 NEW).

I.7 PROVIDE SHOWER FACILITIES TO UPGRADE PARK TO B+.

I.8 EXPAND AND STRIPE BOAT LAUNCHING PARKING AREA.

FUTURE DEVELOPMENT

F.1 PROVIDE 12 PRIMITIVE/GROUP CAMP UNITS WITH CONTROLLED ACCESS.



LEGEND

EXISTING CONDITIONS

NATURAL FEATURES

TOP OF CONSERVATION POOL ELEV. 554	NOT INDICATED
MAXIMUM SEASONAL POOL ELEV. 555 (APRIL TO SEPTEMBER)	. . . . .
5 YEAR FLOOD ELEV. 563	———
TOP OF FLOOD CONTROL POOL ELEV. 580	———
50 YEAR FLOOD ELEV. 580.5	———
EXISTING VEGETATION	———
PARK BOUNDARIES	———

ROADS

PAVED	▬▬
GRAVEL	

RECREATIONAL FACILITIES

VAULT TOILET	
RESTROOMS-WATER BORNE	
CHANGE HOUSE	
ENTRANCE STATION	
PICNIC SHELTER	⬢
GATE	
TRAIL	
SWIMMING BEACH	BEACH
WELL	
MARINA/TRAILER SANITARY STATION	
PLAYGROUND	

FIVE YEAR INITIAL DEVELOPMENT

PROPOSED IMPROVEMENTS	I.1
ROADS	▬▬▬▬
TRAILS	▪▪▪▪▪
EXISTING CAMPS UNITS TO REMAIN	▲
EXISTING CAMP UNITS TO BE RESTORED	◭
EXISTING CAMP UNITS TO BE REMOVED	△

FUTURE DEVELOPMENT

PROPOSED IMPROVEMENTS	F.1
ROADS	□□□□□□□
TRAILS	▪□□□□□□

200 0 100 200 400 800

UPDATED MASTER PLAN
NORFORK LAKE
JORDAN PARK
DEVELOPMENT PLAN

WHITE RIVER WATERSHED
NORTH FORK RIVER
ARKANSAS & MISSOURI

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK ARKANSAS

MAY 1996

"PLATE 6-13 B"

CESWD-ETO-R (CESWL-CO-ON/20 May 96) (1130) 1st End Mr. McCauley/jj/7-2434
SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E, Supplement No. 6

CDR, U.S. Army Corps of Engineers, Southwestern Division, ATTN: CESWD-ETO-R, 1114 Commerce Street, Dallas, TX 75242-0216 11 JUN 1996

FOR Commander, Little Rock District, ATTN: CESWL-CO-ON

1. Reference memorandum, DAEN-CWO-R, 18 July 1986, subject: Leasing Corps-operated Recreation Areas to the Private Sector.

2. Discussion of this proposal with Dave Wahus, CECW-ON, indicates that there is no longer a moratorium on leasing Corps-operated recreation areas to the private sector as set forth in the above referenced memorandum. Accordingly, the subject supplement is approved.

FOR THE COMMANDER:

PAUL D. ROBINSON, P.E.
Director, Engineering and
Technical Services Directorate

Encl (4 cys)
wd

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-CO-ON (1130) 20 May 1996

MEMORANDUM FOR Commander, Southwestern Division
ATTN: CESWD-ETC-R

SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E, Supplement No. 6

1. The purpose of this supplement is to designate a lease expansion area at Tracy Park, as shown on the enclosed Plate 6-23b. The concessionaire, a successful businessman, has requested authority to assume operation and maintenance responsibilities in the park with the exception of the main access road and launching ramp. The roadway, traffic signs, and launch ramp will continue to be maintained by the Mountain Home Project Office.

2. Tracy Park is designated as day-use only, with seven picnic units, a vault restroom, and a single-lane launch ramp. Therefore, no camping fees are being collected. Most park users are marina patrons seeking concession services or boaters needing a launch ramp. Visitations in FY 95 amounted to approximately 51,080. No public comment on this action has been solicited, as this minor change in park operation is considered to have insignificant impact to continued public use.

3. Approval of this master plan supplement is recommended.

FOR THE COMMANDER:

Keith Thonen

KEITH THONEN, P.E.
Chief, Construction-Operations Division

Encl (4 cys)

PROPOSED LEASE EXPANSION TO INCLUDE ENTIRE PARK EXCEPT : ROADWAYS, TRAFFIC SIGNS, AND LAUNCH RAMP.

EXISTING FACILITIES

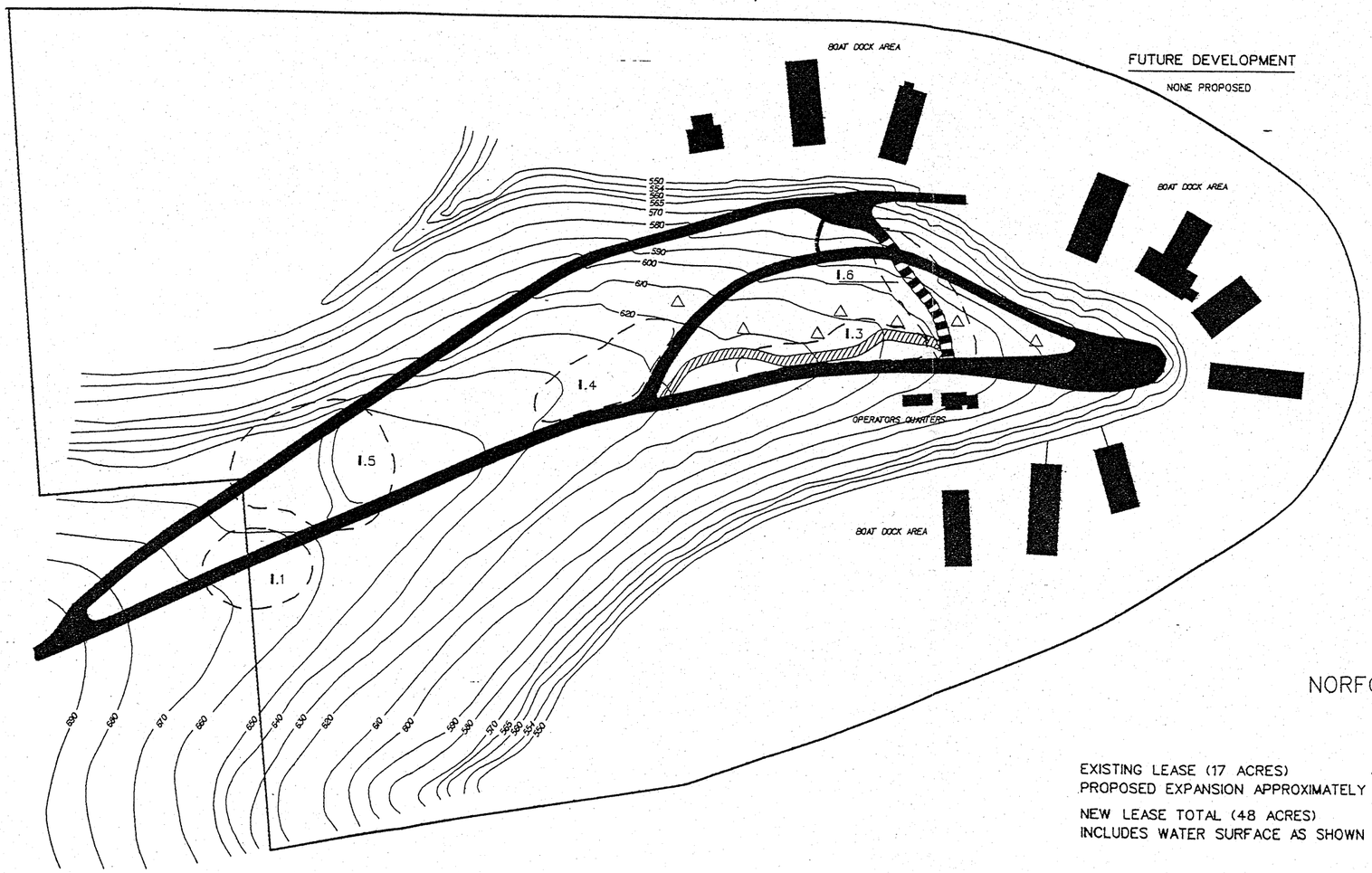
- 7 CLASS C CAMP UNITS
- 1-1 LANE LAUNCH RAMP
- 1-VAULT TOILET
- MARINA

FIVE YEAR INITIAL DEVELOPMENT PLAN

I.1 LIMIT USE OF PARK TO LAUNCHING AND MARINA ACTIVITIES. DIRECT CAMPERS TO GEORGES COVE PARK.
I.2 RELCOATE EXISTING CAMP UNITS TO GEORGES COVE PARK (SEE SYMBOL △). OBLITERATE GRAVEL ROAD AND LANDSCAPE (SEE SYMBOL ////).
I.3 PROVIDE HIGH WATER PARKING AREA FOR MARINA.
I.4 PROVIDE PARKING AND PATH FOR BOAT LAUNCH RAMP.
I.5 REALIGN ROAD, OBLITERATE AND LANDSCAPE VACATED ROAD (SEE SYMBOL ////).
I.6 PROVIDE NEW ROAD TO SEPARATE BOAT LAUNCH TRAFFIC FROM MARINA AREA.

FUTURE DEVELOPMENT

NONE PROPOSED

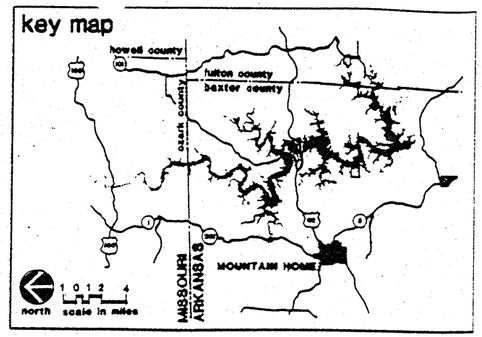


NORFORK LAKE

EXISTING LEASE (17 ACRES)
PROPOSED EXPANSION APPROXIMATELY (31 ACRES)

NEW LEASE TOTAL (48 ACRES)
INCLUDES WATER SURFACE AS SHOWN

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 583	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements F.1
Roads
Trails

100 0 50 100 200 400
north scale in feet

UPDATED MASTER PLAN
NORFORK LAKE
TRACY PARK
DEVELOPMENT PLAN

WHITE RIVER WATERSHED
NORTH FORK RIVER
ARKANSAS & MISSOURI

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK ARKANSAS

MAY 1996

CESWL-CO-L (CESWL-CO-L/29 Mar 94) 2d End
SUBJECT: Norfork Lake, Updated Master Plan, D.M. No. 1-E

Chief, Construction-Operations Division 7 Jun 94

FOR Resident Engineer, Mountain Home

The commercial lease expansion area at Henderson Park is reestablished as indicated on the enclosed master plan sheet.

SIGNED

Encl

KEITH THONEN, P.E.
Chief, Construction-Operations Division

Copy Furnished:
Chief, Real Estate Div
Chief, General Engineering Section
Chief, Geotechnical Branch
Chief, Hydrology and Hydraulics Branch
Chief, Environmental Analysis Branch
Chief, Programs Management Branch

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-CO-L (1130) 29 March 1994

MEMORANDUM FOR Commander, Southwestern Division

SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E

1. The purpose of this memorandum is to reestablish a commercial lease expansion area at Henderson Park, Norfork Lake. The area is immediately north and contiguous to lease site "A" as indicated on the enclosed map. When Design Memo No. 1-E was approved on 19 Feb 88, the proposed expansion area was inadvertently deleted from the Henderson Park Master Plan Sheet. Marina dock construction at lease site "A" has made necessary the need to use the expansion area for subleased ferry tour boat landing operations and future expansion area for additional docks and mooring the ferry boat and other vessels. The site is located in NE 1/4, Sec. 26, T20N, R11W, Baxter County, Arkansas.

2. The action will have no impact on existing uses of the area. Please provide an acknowledgment that this area is reestablished.

FOR THE COMMANDER:

Encl (5 cys)

for KEITH THONEN, P.E.
Chief, Construction-Operations
Division

CESWD-CO-RP (CESWL-CO-L/29 Mar 94) 1st End Mr. McCauley/jw/ 7-2434
SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E

CDR, U. S. Army Corps of Engineers, Southwestern Division,
1114 Commerce Street, Dallas, TX 75242 12 APR 1994

FOR Commander, Little Rock District, ATTN: CESWL-CO-L

Reestablishment of the commercial lease expansion area at Henderson Park, Norfork Lake, is approved as requested.

FOR THE COMMANDER:

Vicki G. Dixon

VICKI G. DIXON
Acting Chief, Recreation-Resources and Regulatory Division
Directorate of Construction-Operations

Encl
wd

CF (w/basic & encl):
CECW-ON

Existing Facilities

Area A
- Trailer Sanitary Station

Area B
- 38 Class B Camp Units w/ Electric
- 2 Vault Toilets
- 1-6 Unit Picnic Shelter
- Swimming Beach
- Minor Entrance Station
- 1-2 Lane Launch Ramp
- Marina

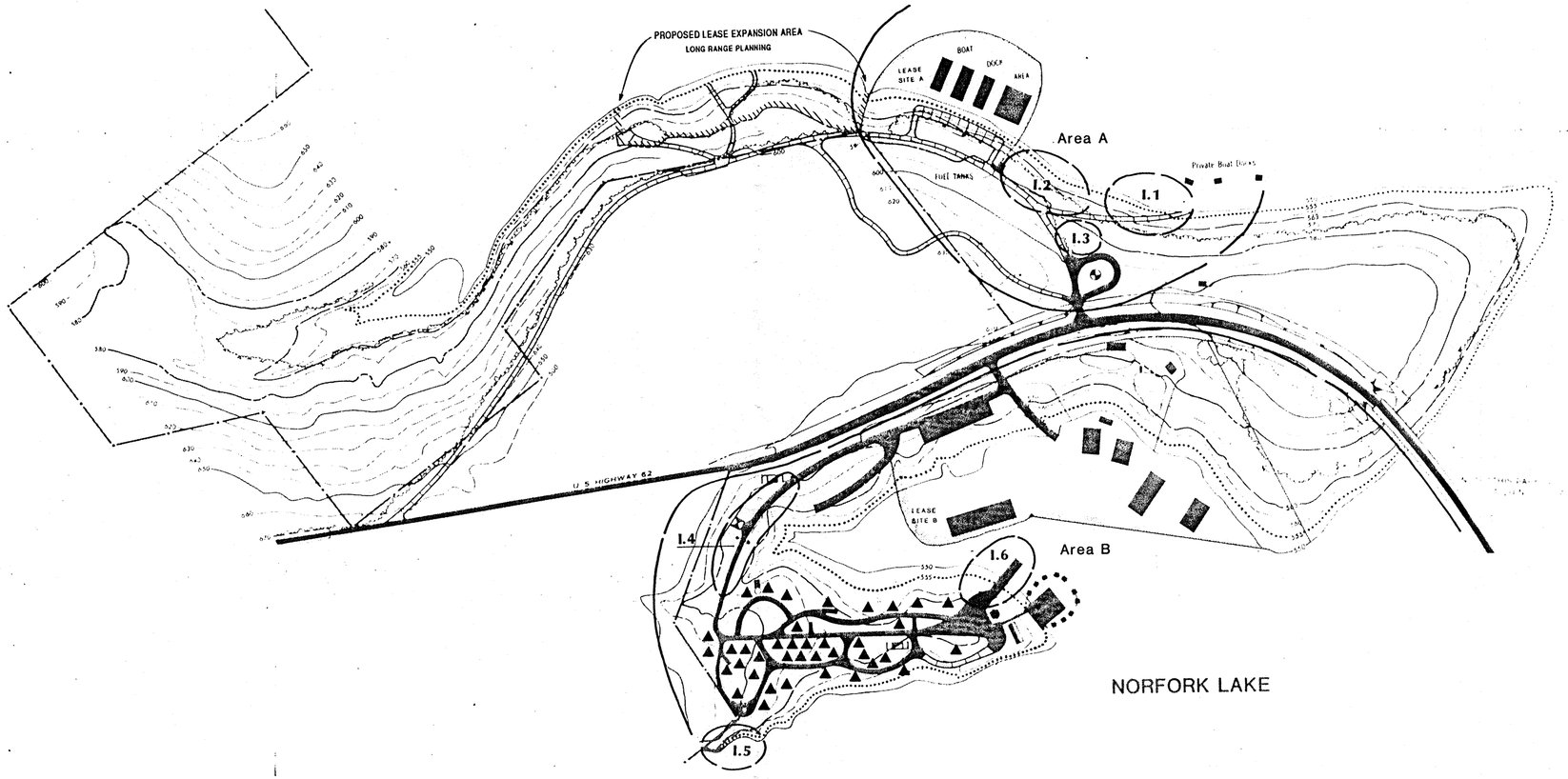
Five Year Initial Development

Area A
I.1 Provide 1-2 lane launch ramp
I.2 Provide paved parking area for 20 cars w/ trailers
I.3 Provide vault toilet facilities.

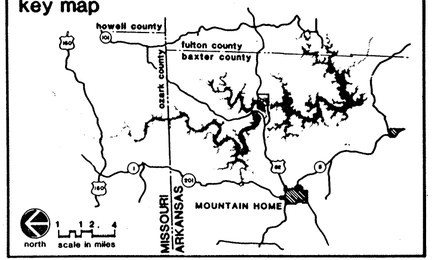
Area B
I.4 Raise access road to el. 565.0
I.5 Stabilize bank to prevent further erosion.
I.6 Abandon and demolish launch ramp upon completion of new launch lane in Area A.

Future Development

None proposed



key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved	
Gravel	

Recreational Facilities

Vault Toilet	
Restrooms- water borne	
Change House	
Entrance Station	
Picnic Shelter	
Gate	
Trail	
Swimming Beach	
Well	
Marina/ Trailer Sanitary Station	
Playground	

Five Year Initial Development

Proposed Improvements	I.1
Roads	
Trails	
Existing Camp Units to Remain	
Existing Camp Units to be Restored	
Existing Camp Units to be Removed	

Future Development

Proposed Improvements	F.1
Roads	
Trails	

north — 200 0 100 200 400 800 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

HENDERSON PARK DEVELOPMENT PLAN

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri

November 1987

CESWD-CO-RP (CESWL-CO-L/19 Jul 93) 1st End Mr. McCauley/jw/ 7-2434
SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E, Supplement No. 4

CDR, U.S. Army Corps of Engineers, Southwestern Division,
1114 Commerce Street, Dallas, Texas 75242

23 JUL 1993

FOR Commander, Little Rock District, ATTN: CESWL-CO-L

Approved.

FOR THE COMMANDER:

Kenneth L. Waldie

KENNETH L. WALDIE, P.E.
Chief, Recreation-Resources and Regulatory Division
Directorate of Construction-Operations

Encl
wd

CF (w/basic & encl):
CECW-ON

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-CO-L

19 July 1993

MEMORANDUM FOR Commander, Southwestern Division,
ATTN: CESWD-CO-RP

SUBJECT: Norfork Lake, Updated Master Plan, D. M. No. 1-E, Supplement No. 4

1. The purpose of this supplement is to reallocate approximately 32 acres of land from Operations: Natural Area (classified as multiple resource management area by ER 1130-2-435) to Recreation. The Fulton County Judge has submitted a request to lease the land for development of a public park. Short term plans include construction of campsites, picnic sites, restrooms and parking area expansion within the first 5 years of the lease period. Over the next 5-year period between 1998 and 2003, additional facilities planned include campsites, picnic sites, pavilion, water well, horseshoe pitching pit, volleyball court, and expanded parking area. Existing facilities licensed to Fulton County at the proposed lease site include a concrete launching ramp, crushed stone parking area, and crushed stone access. The County has received notification of a commitment of funds from the Arkansas Department of Parks and Tourism, subject to the Corps granting a lease of the land for development of a park.

2. Recreational use is considered the best use of the land. Curley Point Park, the nearest park in this remote area of Norfork Lake, is located approximately 8 miles by road from the lease site. In 1982 Curley Point Park was closed to all recreational activities, except boat launching and primitive camping, as an economy measure.

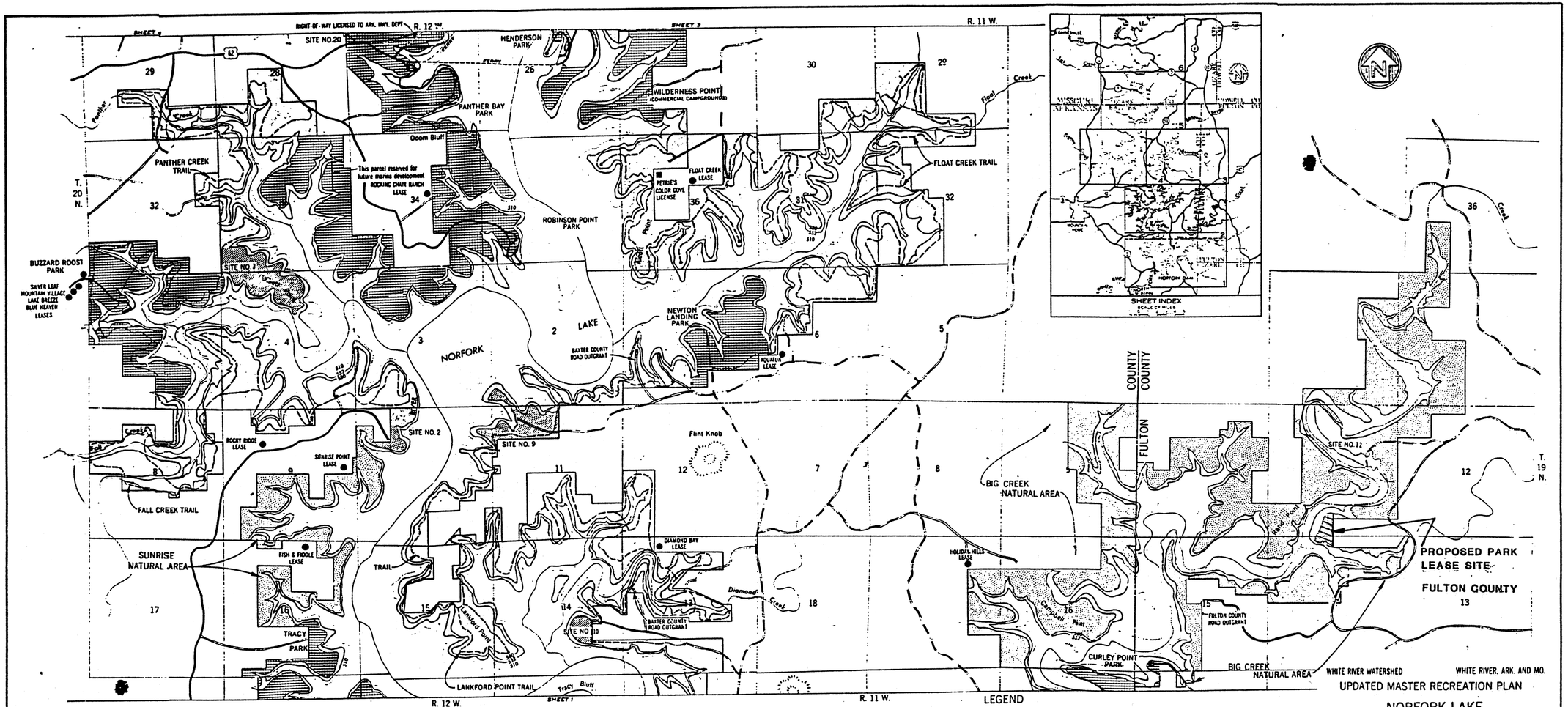
3. The proposed lease site is presently used for boat launching and occasional unauthorized primitive camping. With the County assuming the operation and maintenance of the area, project manpower presently used to patrol and remove litter can be more effectively used in the developed parks on Norfork Lake.

4. Approval of this supplement is recommended.

FOR THE COMMANDER:

Encl (4 cys)

for KEITH THONEN, P.E.
Chief, Construction-Operations
Division



WHITE RIVER WATERSHED — WHITE RIVER, ARK. AND MO.

UPDATED MASTER RECREATION PLAN

NORFORK LAKE
LAND USE MAP

SCALE OF FEET
2,000 0 2,000 4,000 6,000

IN 6 SHEETS — SHEET NO. 2

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, DECEMBER 1972

REVISED JULY 1993

EXHIBIT TO SUPPLEMENT NO.4 PLATE 4

CESWD-CO-RP (CESWL-CO-L/15 Jan 93) 1st End Mr. McCauley/jw/ 7-2434
SUBJECT: Norfork Lake, Updated Master Plan, D.M. No. 1-E, Supplement No. 3

18 FEB 1993

CDR, U.S. Army Corps of Engineers, Southwestern Division,
1114 Commerce Street, Dallas, TX 75242

FOR Commander, Little Rock District, ATTN: CESWL-CO-L

The subject supplement is approved.

FOR THE COMMANDER:

Kenneth L. Waldie

KENNETH L. WALDIE, P.E.
Chief, Recreation-Resources and Regulatory Division
Directorate of Construction-Operations

Encl
wd

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-CO-L

15 January 1993

MEMORANDUM FOR Commander, Southwestern Division,
ATTN: CESWD-CO-R

SUBJECT: Norfork Lake, Updated Master Plan, D.M. No.1-E, Supplement No. 3

1. The purpose of this supplement is to indicate the temporary location of a group picnic shelter at Quarry Cove Park.

2. In 1989 at Cranfield Park a small metal group picnic shelter (19' X 33') and playground were removed to construct eight campsites with fee turnback funds. The shelter is being stored until additional funds become available to continue the separation of day use and camping in this park. Rather than continuing to store the shelter, it is proposed to utilize the facility on an interim basis in Quarry Cove Park.

3. The shelter at Quarry Cove Park will be located on a relatively level site, as shown on the enclosed plate 6-18B, with existing parking and restroom facilities nearby. Also, water and electrical services are readily accessible, so the only significant cost will be for the concrete floor slab. When funds are made available to separate uses in Cranfield and Quarry Parks, the structure will be relocated to a permanent site.

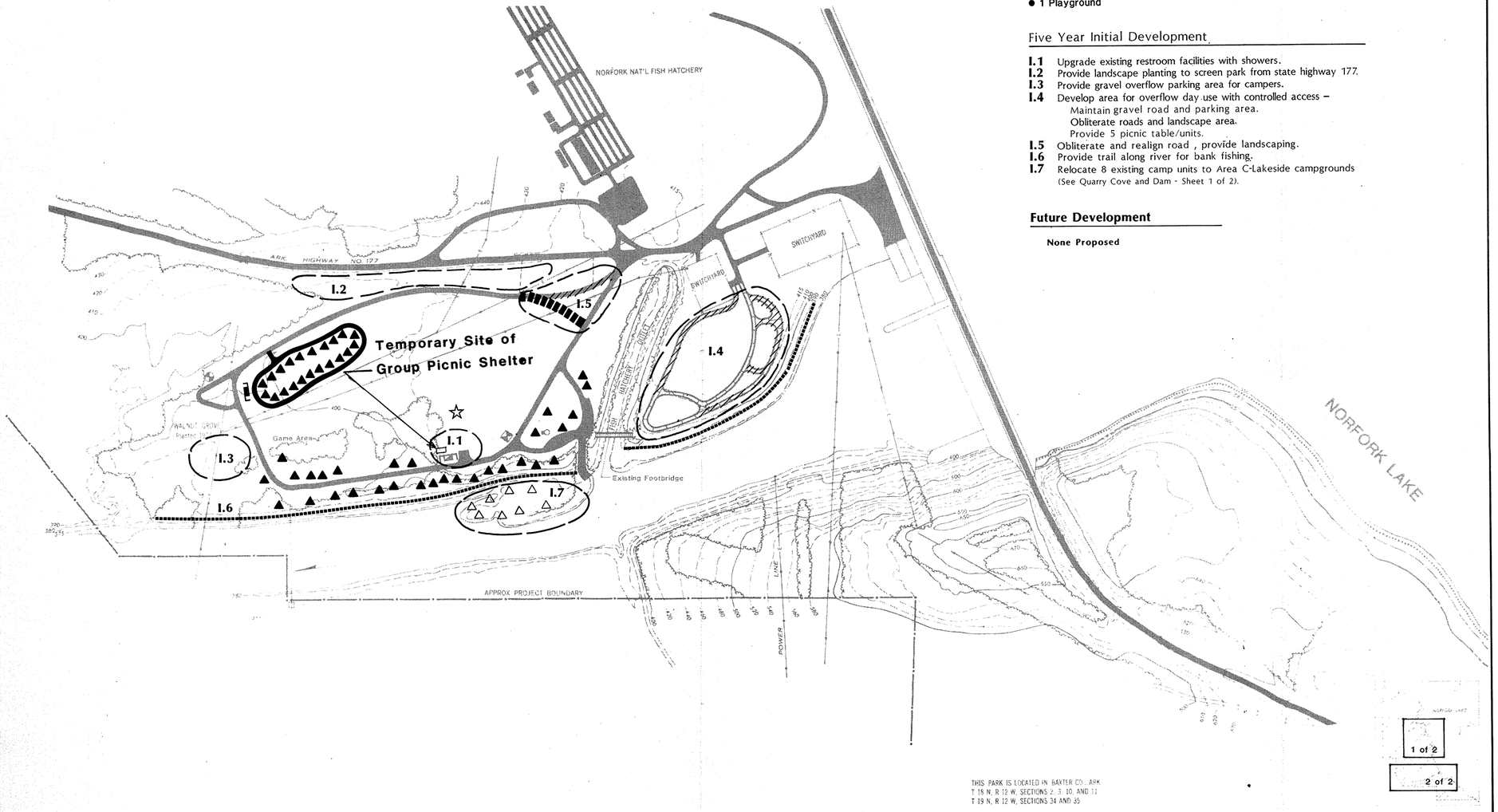
4. Approval of this supplement to temporarily site the group picnic shelter is recommended.

FOR THE COMMANDER:

Thomas P. Risha

for KEITH THONEN, P.E.
Chief, Constructions-Operation
Division

Encl (4 cys)



Existing Facilities

- 51 Class A Camp Units w/ Electric
- 3 Picnic Units
- 1 Vault Toilet
- 1 Water Borne Toilet w/ Showers
- Trailer Sanitary Station
- 1-1 Lane Launch Ramp
- Minor Entrance Station
- 1 Playground

Five Year Initial Development

I.1 Upgrade existing restroom facilities with showers.
I.2 Provide landscape planting to screen park from state highway 177.
I.3 Provide gravel overflow parking area for campers.
I.4 Develop area for overflow day use with controlled access –
Maintain gravel road and parking area.
Obliterate roads and landscape area.
Provide 5 picnic table/units.
I.5 Obliterate and realign road , provide landscaping.
I.6 Provide trail along river for bank fishing.
I.7 Relocate 8 existing camp units to Area C-Lakeside campgrounds
(See Quarry Cove and Dam - Sheet 1 of 2).

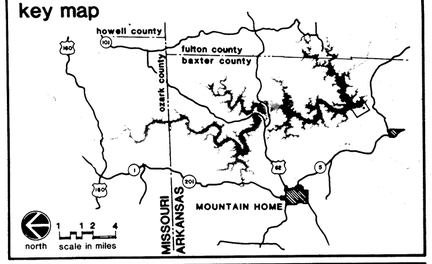
Future Development

None Proposed

THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 19 N, R 12 W, SECTIONS 2, 3, 10, AND 11
T 19 N, R 12 W, SECTIONS 34 AND 35

1 of 2
2 of 2

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5
Existing Vegetation
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north — 200 0 200 400 800 — scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

QUARRY COVE and DAM DEVELOPMENT PLAN

Sheet 2 of 2

U. S. Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
Harland Bartholomew & Associates, Inc. — St. Louis, Missouri
November 1987

Exhibit to Supplement No.3

PLATE 6-18B

CESWD-CO-RP (CESWL-CO-L/23 Oct 90) (1130) 1st End Mr. McCauley
/iv/FTS 729-2434
SUBJECT: Norfork Lake, Updated Master Plan, D.M. No. 1-E,
Supplement No. 2

CDR, Southwestern Division, Corps of Engineers, 1114 Commerce
St., Dallas, TX 75242-0216 8 NOV 1990

FOR Commander, Little Rock District, ATTN: CESWL-CO-L

Approved.

FOR THE COMMANDER:

BARRY G. ROUGHT, P.E.
Director, Directorate of
Construction-Operations

Encls
wd

CF (w/basic & encls):
CECW-ON
CESWD-RE-M
CESWD-PL-R

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

23 OCT 1990

CESWL-CO-L (1130)

MEMORANDUM FOR Commander, Southwestern Division,
ATTN: CESWD-CO-RP

SUBJECT: Norfork Lake, Updated Master Plan, D.M. No. 1-E, Supplement No. 2

1. The purpose of this supplement is to indicate the relocation of group picnic shelters at Cranfield and Bidwell Point Parks which were destroyed during the flood of May 1990.

2. Rather than rebuild the structures in areas subject to frequent flooding, it is proposed to relocate the group picnic shelters to elevations above the flood control pool elevation. Each shelter will be provided with water, electricity, grill, picnic tables, portable restrooms, and parking facilities. Funds from the FY 90 O&M General Emergency Supplemental Appropriation will be utilized for construction.

3. In Cranfield Park, the existing structure site is in an area of the park that is closed each year from November 1 through March 30 and is also inaccessible when the lake level covers the causeway to the island portion of the park. The relocated site, as shown on the enclosed Plate 6-05B, provides for separation of use areas and offers visitors an excellent view of the lake. The structure will also complement nearby day-use facilities such as the boat launching ramp and handicapped fishing dock. Since the facility will be open year-round, revenues will increase from reservation fees.

4. At Bidwell Point Park, the relocated site offers an excellent view of the lake and is easily accessible to visitors. The new site, as shown on the enclosed Plate 6-03B, is served by utilities, requires minimal site preparation, and permits future expansion.

5. Approval of this supplement is recommended.

Charles C. McCloskey III

2 Encls (4 cys)

CHARLES C. McCLOSKEY III
Colonel, Corps of Engineers
Commanding

Existing Facilities

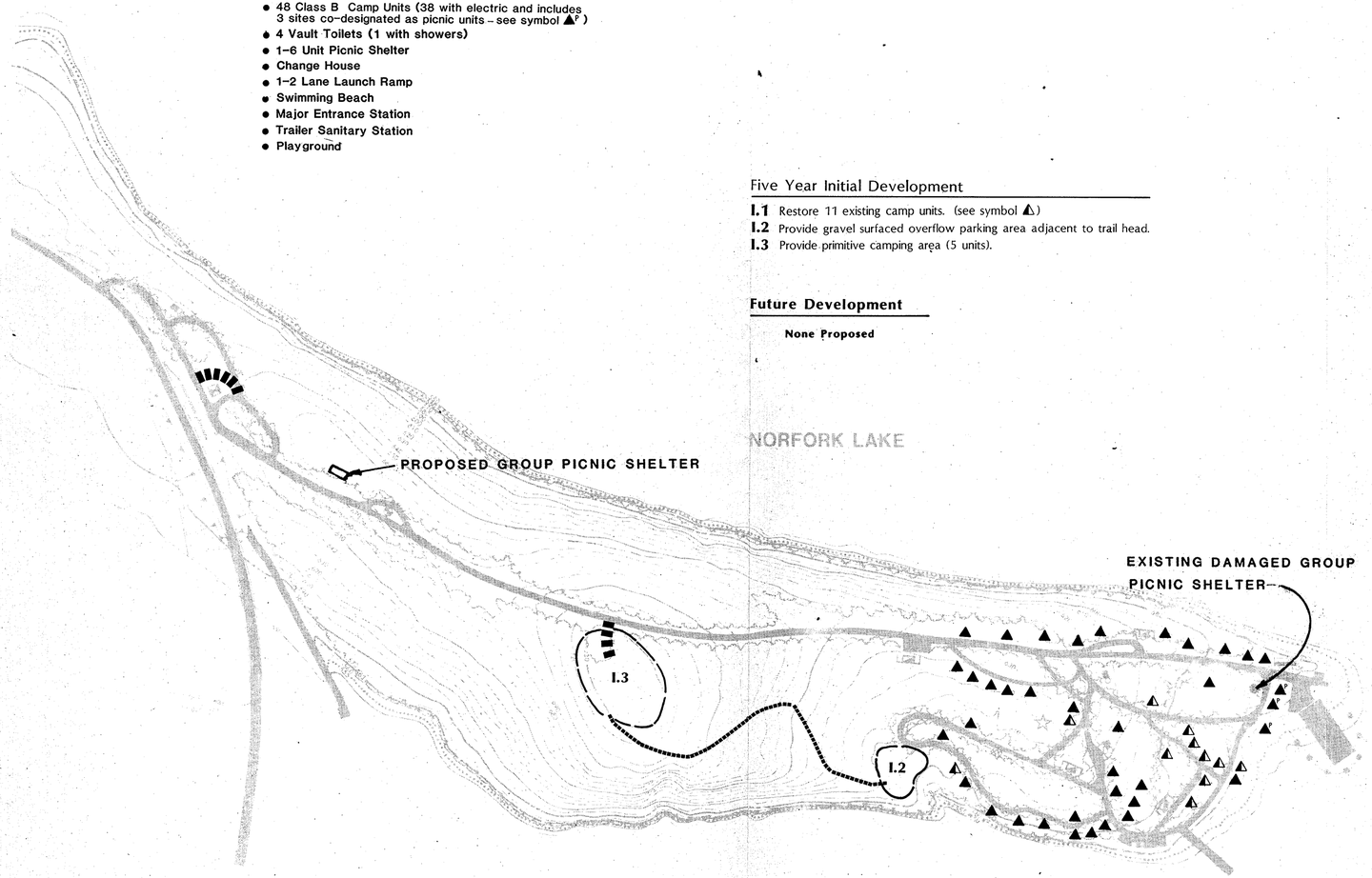
- 48 Class B Camp Units (38 with electric and includes 3 sites co-designated as picnic units – see symbol ▲P)
- 4 Vault Toilets (1 with showers)
- 1–6 Unit Picnic Shelter
- Change House
- 1–2 Lane Launch Ramp
- Swimming Beach
- Major Entrance Station
- Trailer Sanitary Station
- Playground

Five Year Initial Development

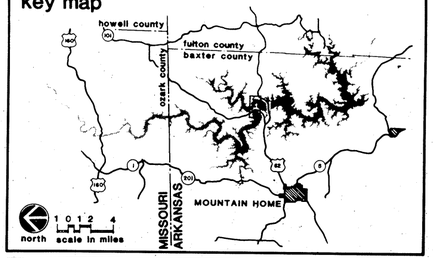
I.1 Restore 11 existing camp units. (see symbol ◭)
I.2 Provide gravel surfaced overflow parking area adjacent to trail head.
I.3 Provide primitive camping area (5 units).

Future Development

None Proposed



key map



legend

Existing Conditions

Natural Features
Top of Conservation Pool Elev. 554 Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5
Existing Vegetation
Park Boundaries

Roads
Paved
Gravel

Recreational Facilities
Vault Toilet
Restrooms– water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development
Proposed Improvements I.1
Roads
Trails
Existing Camp Units to Remain ▲
Existing Camp Units to be Restored ◭
Existing Camp Units to be Removed △

Future Development
Proposed Improvements F.1
Roads
Trails

north
200 0 100 200 400 800
scale in feet

master plan for Norfork Lake
white river watershed
north fork river, arkansas and missouri

BIDWELL POINT PARK DEVELOPMENT PLAN

REVISED OCTOBER 1990

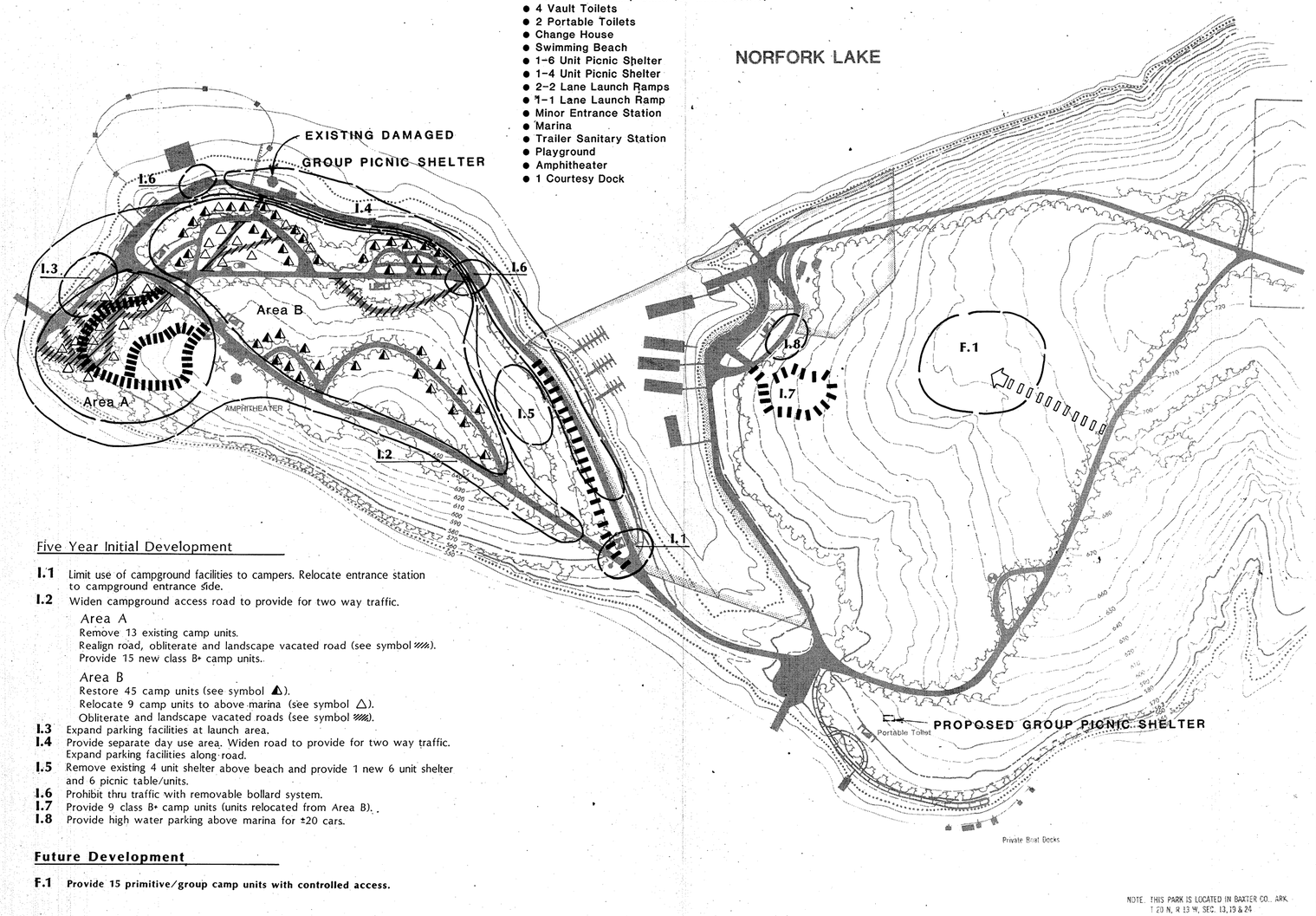
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

Existing Facilities

- 74 Class B+ Camp Units (61 with electric)
- 4 Vault Toilets
- 2 Portable Toilets
- Change House
- Swimming Beach
- 1-6 Unit Picnic Shelter
- 1-4 Unit Picnic Shelter
- 2-2 Lane Launch Ramps
- 1-1 Lane Launch Ramp
- Minor Entrance Station
- Marina
- Trailer Sanitary Station
- Playground
- Amphitheater
- 1 Courtesy Dock



Five Year Initial Development

I.1 Limit use of campground facilities to campers. Relocate entrance station to campground entrance side.

I.2 Widen campground access road to provide for two way traffic.

Area A
Remove 13 existing camp units.
Realign road, obliterate and landscape vacated road (see symbol ▨).
Provide 15 new class B+ camp units.

Area B
Restore 45 camp units (see symbol ◭).
Relocate 9 camp units to above marina (see symbol △).
Obliterate and landscape vacated roads (see symbol ▨).

I.3 Expand parking facilities at launch area.

I.4 Provide separate day use area. Widen road to provide for two way traffic. Expand parking facilities along road.

I.5 Remove existing 4 unit shelter above beach and provide 1 new 6 unit shelter and 6 picnic table/units.

I.6 Prohibit thru traffic with removable bollard system.

I.7 Provide 9 class B+ camp units (units relocated from Area B).

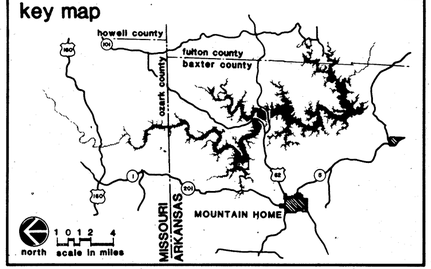
I.8 Provide high water parking above marina for ±20 cars.

Future Development

F.1 **Provide 15 primitive/group camp units with controlled access.**

NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK. T 20 N, R 13 W, SEC. 13, 19 & 24

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554	Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)	
5 Year Flood Elev. 563	
Top of Flood Control Pool Elev. 580	
50 Year Flood Elev. 580.5	Not Indicated
Existing Vegetation	
Park Boundaries	

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain ▲
Existing Camp Units to be Restored ◭
Existing Camp Units to be Removed △

Future Development

Proposed Improvements — F.1
Roads
Trails

north
200 0 100 200 400 800
scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

CRANFIELD PARK DEVELOPMENT PLAN

REVISED OCTOBER 1990
US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri
November 1987

EXHIBIT TO SUPPLEMENT NO. 2

CESWD-CO-RP (CESWL-CO-L/28 Feb 89) (1130a) 1st End Mr. McCauley/te/767-2434
SUBJECT: Norfork Lake, Updated Master Plan, D.M. No. 1-E, Supplement No. 1

CDR, Southwestern Division, Corps of Engineers, 1114 Commerce Street, Dallas, TX 75242-0216 10 MAR 1989

FOR CDR, Little Rock District, ATTN: CESWL-CO-L

Approved.

FOR THE COMMANDER:

for GENE R. DRETKE, P.E.
Acting Chief, Construction-Operations Division

Encl
w/d

CF (w/basic & encl):
CESW-ON
CESWD-RE-M
CESWD-PL-R

REPRODUCED AT GOVERNMENT EXPENSE

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-CO-L (1130)

28 February 1989

MEMORANDUM FOR Commander, Southwestern Division, ATTN: CESWD-CO-R

SUBJECT: Norfork Lake, Updated Master Plan, D.M. No. 1-E, Supplement No. 1

1. The purpose of this supplement is to add an additional 1.5 acres to the lease area of the Buzzard Roost Boat Dock, Lease No. DACW03-1-86-293, Buzzard Roost Park, Norfork Lake.

2. At the present time the lease area in this park is utilized to capacity and the lessee has requested authority to construct an 18-stall houseboat and cruiser dock which would be located adjacent to and northeast of the existing storage docks. The proposed facility will be placed in the location now occupied by a community dock which is being moved by agreement of the owners and the concessionaire to a position at the north end of the private floating facilities in the area.

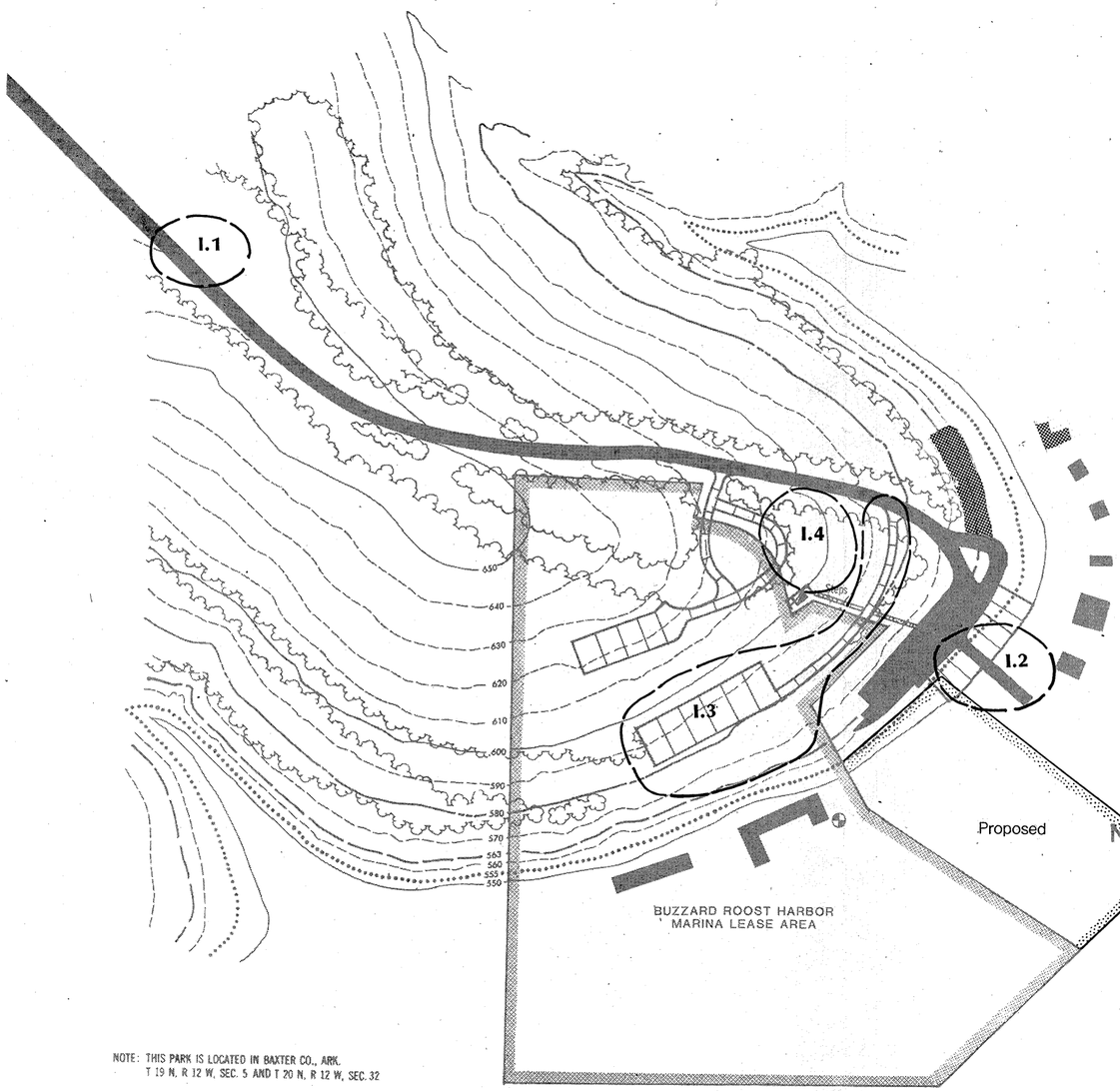
3. The additional area is necessary to provide the lessee with adequate area to conduct business and provide needed boat storage service to the public. The lessee has been working with our Real Estate Division and owners of the community dock since last July in order to reach agreement on details involved in the proposed action. For this reason, request you notify us by phone as soon as a decision is reached. Placement of the proposed dock in the area will have no adverse impact on public use of the area

4. Recommend approval of this supplement.

Encl (4 cys)

ANTHONY V. NIDA
Colonel, Corps of Engineers
Commanding

"REPRODUCED AT GOVERNMENT EXPENSE"



NOTE: THIS PARK IS LOCATED IN BAXTER CO., ARK.
T 19 N, R 12 W, SEC. 5 AND T 20 N, R 12 W, SEC. 32

Existing Facilities

- 1 Vault Toilet
- 1-1Lane Launch Ramp
- High Water Parking Area
- Marina w/ Sanitary Station

Private Boat Docks

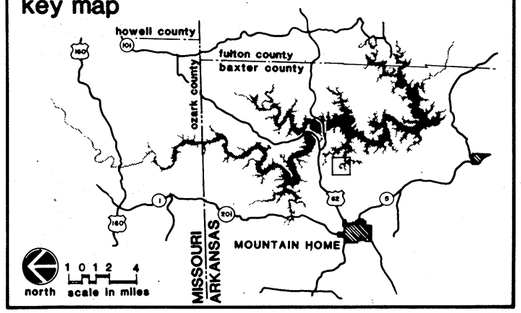
Five Year Initial Development

I.1 Maintain this park as a lake access point.
I.2 Provide 1 additional launch lane.
I.3 Pave high water parking area and access road, and seed slopes to stop erosion and siltation of cove.
I.4 Remove remnants of abandoned camp units.

Future Development

None Proposed

key map



legend

Existing Conditions

Natural Features

Top of Conservation Pool Elev. 554 — Not Indicated
Maximum Seasonal Pool Elev. 555 (April to September)
5 Year Flood Elev. 563
Top of Flood Control Pool Elev. 580
50 Year Flood Elev. 580.5 — Not Indicated
Existing Vegetation
Park Boundaries

Roads

Paved
Gravel

Recreational Facilities

Vault Toilet
Restrooms- water borne
Change House
Entrance Station
Picnic Shelter
Gate
Trail
Swimming Beach
Well
Marina/ Trailer Sanitary Station
Playground

Five Year Initial Development

Proposed Improvements — I.1
Roads
Trails
Existing Camp Units to Remain
Existing Camp Units to be Restored
Existing Camp Units to be Removed

Future Development

Proposed Improvements — F.1
Roads
Trails

north

200 0 100 200 400 800
scale in feet

master plan for Norfork Lake

white river watershed
north fork river, arkansas and missouri

BUZZARD ROOST PARK DEVELOPMENT PLAN

US Army Engineer District, Little Rock — Little Rock, Arkansas

prepared by
HBA Harland Bartholomew & Assoc., Inc. — St. Louis, Missouri

November 1987

EXHIBIT TO SUPPLEMENT NO.

CESWD-CO-R (CESWL-CO-L/undated) (1130) 1st End McCauley/lw/7-2434
SUBJECT: Project Resource Management Plan, Appendix A, Supplement No. 1, Norfork Lake Master Plan

Cdr, Southwestern Division, Corps of Engineers, 1114 Commerce Street, Dallas, TX 75242-0216 28 JUL 1988

FOR: Commander, Little Rock District, ATTN: CESWL-CO-L

Approved.

FOR THE COMMANDER:

William R. Pearson

GENE R. DRETKE, P.E.
Acting Chief Construction-
Operations Division

Encl
wd

CF (w/basic & encl):
CECW-ON
CESWD-PL-R
CESWD-RE-M

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-CO-L (1130)

MEMORANDUM FOR: Commander, Southwestern Division, ATTN: CESWD-CO-R

SUBJECT: Project Resource Management Plan, Appendix A, Supplement No. 1, Norfork Lake Master Plan

1. Reference 1st Endorsement CESWD-PL-R dated 16 February 1988 to Memorandum CESWL-PL dated 19 November 1987, subject: Norfork Lake, North Fork Lake, Arkansas and Missouri, Design Memorandum No. 1-E, Updated Master Plan for Development and Management of Norfork Lake.

2. SWD Comment No. 14 of the referenced endorsement recommended that the District prepare a plan for constructing the facilities proposed in the Five-Year Initial Development Plan that also includes the type of funding to be used. Enclosed is the requested plan and schedule for construction. Subject to approval, the implementation plan will be incorporated into the Operational Management Plan for Norfork Lake, which is presently being prepared.

3. Approval of this supplement is recommended.

Encl (4 cys)

FOR James W. Marlow
ANTHONY V. NIDA
Colonel, Corps of Engineers
Commanding

Norfork Lake Master Plan
Supplement No. 1 To
Project Resource Management Plan

I. General

1. Objectives. The primary consideration in updating the Norfork Lake Master Plan was to rework the existing parks to gain greater control over use of the parks, to eliminate conflicts between uses, to consolidate facilities in order to reduce operation and maintenance costs, and to increase fee collections. The objectives of this supplement are to establish a cost effective recreation facilities rehabilitation program, increase visitor satisfaction, increase use fee collections, and reduce operation and maintenance costs, in agreement with the Five Year Initial Development Plan. Completing the work necessary to carry out this plan in an orderly manner will require scheduling and timely funding of the development. Budget requests for use of various funds which are available or which may be available in the future are shown in the attached Schedule of Development. This schedule was developed with the realization that some of the development would generate additional use fees to help pay for non fee producing facilities which decrease O&M costs or facilities in previously free areas with unknown fee producing potential. The schedule must remain somewhat flexible since successful completion can only be accomplished by adequate and timely funding from all available sources.

2. Policy. Corps policy supports renovation (replacement or repair of facilities) and consolidation of project recreation areas as practicable and proven methods for reducing project operation and maintenance (O&M) costs and increasing user fee revenues. Generally, expenditures of Special Recreation Use Fee (SRUF) funds may be used for additional facilities, improvements, renovation and consolidation of parks in support of the stated goals. O&M funds may be used for replacement, relocation, repair, and modifications that are needed to reduce O&M costs, increase revenues, or retain the intended purpose of the existing recreation facility. Correction of sanitary deficiencies through Code 711 funds allocations will continue as funds are available. Interpretations vary widely regarding the type and extent of improvements and modifications which may be accomplished with O&M funds and SRUF funds. Subject to adequate justification, these guidelines will be used in implementation of the Five Year Initial Development Plan. Some specific examples of activities authorized in each funding category are listed below.

3. Authorized SRUF Development.

a. Additional facilities that will upgrade a park to a higher use fee classification or otherwise increase fee collections.

b. Installation of electrical systems when capital improvements and O&M costs are recoverable.

c. Additional campsites in fee parks when it will result in increased fee collections or decreased O&M costs.

d. Renovation and consolidation of parks and separation of day use and camping facilities to minimize conflicts or enhance use fee collections.

e. Construction of group facilities, such as picnic shelters or multiple family sites, that result in an increase of use fee revenues.

f. Correction of sanitary deficiencies when Code 711 funds are unavailable.

h. Other facilities deemed to be an addition or betterment to the parks.

4. Authorized O&M Modifications.

a. Turnout leveling - Modern recreation vehicles require campsite turnouts to be level for equipment to operate properly. Many campsites at Norfork Lake were constructed along existing ground contours. This requires excessive blocking and jacking of the RV and presents safety hazards to the camper. The steep campsites are rarely used while the level campsites are over used. Leveling of campsites distributes visitor use and thereby reduces repairs.

b. Campsite hardening. Over the years the soil around campsites is compacted by campers and their equipment, reducing the oxygen transfer and moisture absorption capacity of the soil. Trees and other vegetation are weakened and killed by this action. This increases maintenance costs since potential hazards such as falling limbs and weakened trees must be actively sought out and corrected. Providing defined campsite limits and a wear surface of crushed stone, pea gravel, bark, etc. will allow nutrients and oxygen to reach the tree roots. This reduces erosion, potential hazards (with attendant liability), and O&M costs.

c. Campsite and picnic site relocation. Some sites were poorly located during the initial construction of the Norfork Lake Parks. Sometimes relocation of campsites and picnic sites are necessary to obtain more efficient use of these facilities. Undesirable sites can be moved nearer to the water or better located for RV access in order to obtain a higher occupancy rate.

d. Temporary high water parking In order for some parks to remain operational for boat launching during periods of high water, temporary gravel parking areas or widening of existing roads is necessary. Management problems and damages caused by visitors parking on unsurfaced grounds can be reduced if adequate parking facilities are provided.

e. Temporary launching facility. In some parks existing roads can be widened or concrete sections added to the roads to accommodate boat launching during periods of high water. This can be done at minimal costs and would reduce resource damage from vehicles using undesignated sites.

f. Widening existing launching ramp. Overused launching ramps are not functional since users must wait an excessive length of time to launch. These are low cost - low maintenance facilities which must accommodate boats on demand to serve the intended purpose. Separate new launching ramps are not appropriate for construction with O&M funds because of the required support facilities.

g. Entrance complex. Permanent, adequately sized gatehouses, with traffic control devices, crash barriers, and landscaping improves safety for the park attendant and campers using the facility. Such gatehouses also makes a favorable impression on visitors entering the parks. O&M costs are reduced by more safe and efficient operation and processing of incoming campers and visitors.

h. Minor road relocation. Circulation of traffic within a park can be improved with minor road alterations such as closing a section of park road and realigning another section of the road. Management problems, traffic hazards, and resource damages are reduced with minor realignment of park roads.

i. Parking area enlargement. Inadequately sized facilities can be enlarged at minimal costs. Management problems, erosion, accidents, and repair of damage caused by visitor parking in an uncontrolled manner can be reduced by providing adequate paved parking space.

j. Raise causeway. At some parks, causeway portions of the roads are flooded during high lake elevations causing large usable portions of the parks to become islands. By raising the road elevation a few feet, the entire park can remain open and fee collections can continue.

k. Table canopy for existing campsite. Tables located in unshaded areas are used only in the early spring or late fall. Providing shade for the table will increase the occupancy rate for these campsites and eliminate the necessity to construct additional sites in these parks.

l. Day use facilities for improved management. In certain areas day use facilities may be relocated or added in existing parks to improve campground management and reduce O&M costs. Separation of camping and day use by minor rearrangement of facilities can be justified and done with minimal expenditures. For example consolidation or relocation of day use facilities from several small parks into a centrally located day use area may be economically feasible.

m. Renovation to improve appearance or function. Improvements to reduce O&M costs at existing facilities include:

(1.) Paving existing roads, parking areas, and turnouts to reduce O&M costs.

(2.) Installing steps, ramps, walkways or foot bridges to facilities.

(3.) Modification of group picnic shelters to include support facilities such as fireplaces or benches.

(4.) Installing signs and bulletin boards as necessary for information and guidance to the public.

(5.) Installing courtesy docks and security lights at launching ramps for improved visitor safety.

(6.) Grading existing swimming areas to improve visitor safety.

(7.) Providing additional water fountains and hydrants in an existing area which has pressurized water system.

(8.) Renovate the exterior or interior of recreational buildings and project structures to reduce maintenance cost, improve appearance, or reduce energy consumption.

5. Authorized Code 711 Funds Development. The construction of recreation facilities at completed projects, other than those programs listed above, is limited to a 50 percent federal cost - 50 percent non-federal cost basis consistent with the Administration policy of encouraging states and their political subdivisions to share in the development of public recreation facilities. The only other exception to this cost sharing policy is for upgrading of existing facilities required to meet urgent sanitation needs in accordance with the provisions of applicable local, state, and federal laws. In this instance, the Corps may develop these sanitation facilities at 100 percent federal cost. Examples of such development include the following:

a. Water well
b. Marine and trailer dumping stations
c. Connections to municipal water systems
d. Vault restrooms
e. Chemical vault restroom
f. Pressure and chlorination system for existing well
g. Connection to municipal sewage systems

6. Other Development. In this development plan some facilities are proposed for which the Corps has no authority to provide at 100 percent federal expense. For example, some day use facilities which cannot be justified as needed to reduce O&M costs incurred in managing an existing park, may only be constructed when a cost sharing partner is available. High water facilities or additional parking facilities proposed for development solely to serve the customers of marinas can only be constructed if the concessionaire funds the development and locates the facilities within the lease area. There may be inadequate SRUF funds available to construct certain planned facilities within the time frame of the Five-Year Initial Development Plan. The cost of these described facilities are identified but generally will not be funded or funding deferred.

II. PROPOSED DEVELOPMENT

A. BIDWELL POINT PARK.

Five Year Initial Development	O&M	SRUF
I.1 Restore 11 existing camp units	$23,400	
I.2 Provide gravel surfaced overflow parking area adjacent to trail head.		$ 5,700
I.3 Provide primitive camping area (5 units)		19,700
Work Subtotals	$23,400	$25,400
Contingency, E&D, and S&A (30%)	7,100	7,600
Subtotals	$30,500	$33,000
Overall Total	$63,500	

JUSTIFICATION:

Eleven existing campsites will require restoration which includes providing a contained gravel impact area, leveled parking spur, and replace or repair the table, grill-firering, and utility table. Some of these sites are located along a steep bluff area that has received some erosion damage during periods of high lake levels, and severe soil compaction around existing trees. Site restoration will provide a more usable site, reduce O & M costs and erosion problems, lessen the level of damage to trees and by providing handrails around the impact areas make the sites safer for the public. The trail and parking area will increase the number of campers using the park and should result in increased fee collection. The parking area will be used as an overflow camping area when campsites are fully occupied. Fee collections should offset the minimum development costs. Since the more costly support facilities are already in place the costs for the primitive campsites should be recovered in a few years.

B. BUZZARD ROOST PARK.

Five Year Initial Development		O & M
I.1	Maintain park as a lake access point.	$ 1,800
I.2	Provide 1 additional launch lane.	25,000
I.3	Pave high water parking area and access road and seed slopes to stop erosion and siltation.	92,600
I.4	Remove remains of abandoned camp units.	2,500
	Work Subtotals	$121,900
Contingency, E&D, and S&A (30%)		36,600
	Subtotals	$158,500
	Overall Total	$158,500

JUSTIFICATION:

This park will be maintained as a public access point. O & M funds will be utilized to remove campsite remnants that have been used as primitive permit camping sites since the park was closed to developed camping in 1977. The existing launching ramp needs to be enlarged for safety and to handle the large number of fishermen and boaters who use this park. Paving the existing parking area and access road will reduce future maintenance costs and will provide a more usable facility since the project no longer has the necessary manpower or equipment to maintain gravel surfaces. O & M funds will also be used to eliminate erosion problems on cut slopes around the ramp parking area.

C. CRANFIELD PARK.

Five Year Initial Development	O & M	OTHER
I.1 Limit use of campground facilities to campers. Relocate entrance station to campground entrance side.	$ 7,300	
I.2 Widen campground access road to provide for two way traffic.	67,500	
Area A Remove 13 existing camp units. Realign road, obliterate and landscape vacated road Provide 15 new class B+ campsites.	63,700	
Area B Restore 45 camp units. Relocate 9 camp units to above marina. Obliterate and landscape vacated roads.	116,500	
I.3 Improve parking facilities at launch area	4,000	
I.4 Separate day use area from campground. Widen road for safety by routing traffic away from campground. Improve parking facilities along road.	2,500 53,600	
I.5 Remove existing 4 unit shelter above beach and provide 1 new 6 unit shelter and 6 picnic table units.	45,300	
I.6 Prohibit thru traffic with removable bollard.	1,000	
I.7 Relocate 9 class B+ camp units from Area B.	16,100	
I.8 Provide high water parking above marina for ± 20 cars.		$12,000
Work Subtotals	$376,700	$12,000
Contingency, E&D, and S&A (30%)	113,000	3,600
Subtotals	$489,700	$15,600
Overall Total $505,300		

JUSTIFICATION:

This park requires a complete restructuring of traffic patterns and flow to provide a safer environment for the campground and to reduce maintenance costs. This would require isolation of the existing day use area from the campground. Currently all traffic is routed through the beach/picnic shelter and parking area then through the campground. This would provide a safer camping area and more usable facilities which should increase fee collections. Renovation of the sites with realignment of roads would reduce maintenance costs for repair of erosion, damage to campsite facilities, and tree maintenance/hazard reduction. Providing adequate and properly aligned parking for day use would reduce maintenance costs for soil compaction, erosion, and vegetation management problems caused by off road parking. Relocating the existing picnic shelter to an area above the flood pool would provide a lower maintenance, more usable facility and would increase reservation fees. OTHER: Current policy prohibits development of parking facilities that benefit only marina customers.

D. CURLEY POINT PARK.

Five Year Initial Development	O & M
I.1 Provide a 1 lane launch ramp with parking. Remove remnants of abandoned camp units and hand pump with canopy.	$50,200
Work Subtotals	$ 50,200
Contingency, E&D, and S&A (30%)	15,000
Subtotals	$ 65,200
Overall Total	$65,200

JUSTIFICATION:

The addition of a launching ramp in this park is necessary for safety. Several old roads are now being used to launch boats which creates erosion and litter problems. The camp units were abandoned in 1977 when the area was made a permit type primitive camping area. These should be removed to prevent litter and cleanup problems. The well is no longer used and should be plugged and the canopy should be removed.

E. GAMALIEL PARK.

Five Year Initial Development		O & M	SRUF	711	OTHER
I.1	Vacate existing beach.	$ 7,300			
I.2	Provide new beach and day use area with Separate parking for day use and campers	123,800			
	5 picnic table/units		13,300		
	Change house with vault toilets			60,000	
	and showers (deleted).				75,000
I.3	Relocate existing picnic shelter to new day use area above elev. 570.	10,000			
I.4	Widen existing ramp for safety Improve existing parking area.	32,000			
I.5	Provide entrance station and control gate to campgrounds	73,500			
I.6	Provide 36 class B+ camp units. 12 relocated from Howard Cove Park	22,600			
	24 new camp units		84,600		
I.7	Restore existing camp units.	69,600			
I.8	Obliterate and landscape vacated roadbeds	20,700			
I.9	Provide waterborne restroom with showers		179,000		
	Work Subtotals	$359,500	276,900	60,000	75,000
Contingency, E&D, and S&A (30%)		107,800	83,100	18,000	22,500
	Subtotals	$467,300	360,000	78,000	97,500
	Overall Total	$1,002,800			

JUSTIFICATION:

The existing beach, which has no parking area, and launching ramp are adjacent and boat traffic presents a hazard to swimmers and creates a congested boating area. Creation of a new beach area and relocation of the picnic shelter from the marina area along with providing 5 new picnic table units will relieve existing day use pressure on the campsites and should allow higher occupancy rates by campers. The existing launch ramp needs an additional lane to safely accommodate the number of users. The new campsites (12 relocated from Howard Cove and 24 new) are needed in this area of the lake to meet existing needs. This park provides the most suitable location and most feasible area for construction. Addition of these sites will make the park large enough to operate more economically with a park attendant control station setup. The water borne restroom with showers is needed to provide class A site development for the entire campground. OTHER: The shower facilities are not necessary to accomodate needs in the day use area.

F. GEORGES COVE PARK.

Five Year Initial Development	O & M	SRUF
I.1 Restore 10 existing camp units.	$19,500	
I.2 Relocate and improve beach area for shared Day use/camping activities.		
Provide 1-6 unit picnic shelter.		20,000
Provide 3 day use/picnic units.		8,000
Provide separate day use parking.		6,000
I.3 Provide 20 Class B camp units and access road w/volunteer collection box.		
7 existing camp units relocated from Tracy.	10,000	
13 new camp units.		45,800
I.4 Abandon and demolish existing launch ramp.		
Provide 1-2 lane launch ramp and parking suitable for high and low water use.	104,200	
Demolish existing metal toilets and provide permanent masonry vault toilets.	60,000	
Water-borne restroom with showers.		125,000
Work Subtotals	$193,700	204,800
Contingency, E&D, and S&A (30%)	58,100	61,400
Subtotals	251,800	266,200
Overall Total	$518,000	

JUSTIFICATION:

Campsite restoration would make the existing sites usable by motorized camping equipment. Since the sites have no turnouts or table pads campers vehicles are parked and driven in a random manner over the campground causing a serious erosion problem. This coupled with the rocky soil makes mowing difficult and hazardous. The restoration and addition of new sites along with an access road would upgrade this area to a Class B campground and make fee collection feasible. Moving the beach to an area further away from the launch complex will provide a safer more protected swim area and make the beach more accessible to campers. Separate day use parking, a picnic shelter, and picnic sites will reduce conflict between user groups and should reduce erosion, damage to vegetation, and the associated maintenance costs. The metal toilets replaced old plastic temporary toilets that were placed over holding vaults several years ago. The plastic toilets were aged and had been damaged by vandals to the point they were not usable. The metal toilets while vandal resistant are not suitable for long term high level use. Replacement of these metal toilets should provide a more useful, lower maintenance facility. Relocation of the launching ramp and addition of one lane will relieve congestion and would allow launching at both high and low lake levels where the existing ramp is suited for launching only at low to moderate lake levels.

G. HAND COVE PARK.

Five Year Initial Development	O & M
I.1 Maintain park as secondary access point. Provide gravel parking area adjacent to launch ramp. Remove concrete tables and well canopy.	$7,200
Work Subtotals	$7,200
Contingency, E&D, and S&A (30%)	2,100
Subtotals	$9,300
Overall Total $9,300	

JUSTIFICATION:

This park has been used as a primitive permit camping area since 1977. Removal of the tables and canopy would reduce maintenance costs. A gravel parking area to serve the boat ramp would lessen maintenance costs by reducing soil erosion and defining the use area to prevent vehicle parking and operation over the whole park.

H. HENDERSON PARK.

Five Year Initial Development	O & M	711
Area A		
I.1 Provide 1-2 lane launch ramp.	$80,000	
I.2 Provide paved parking area for 20 cars with trailers.	69,100	
I.3 Provide vault toilet facilities.		$60,000
Area B		
I.4 Raise access road to el. 565.0.	30,000	
I.5 Stabilize bank to prevent further erosion.	19,800	
I.6 Abandon and demolish launch ramp upon completion of new launch lane in Area A.	4,000	
Work Subtotals	$202,900	$60,000
Contingency, E&D, and S&A (30%)	60,900	18,000
Subtotals	$263,800	$78,000
Overall Total $341,800		

JUSTIFICATION:

The launch ramp in Area A will replace the existing ramp in Area B which is adjacent to the swim beach. The existing launch ramp requires all traffic to go through the campground to get to the ramp and all boat traffic is routed adjacent to the beach when launching or loading. Conflicts and potentially hazardous contacts between boaters and swimmers have been problems in this congested area. The parking area for the proposed 2 lane launch ramp was constructed with excess materials from the Highway 62 bridge construction a few years ago and would only need to be improved to make it a manageable, low maintenance facility. The parking and toilet facilities are necessary accompaniments to the new launch ramp. The access road to the campground floods at several feet lower elevation than the major portion of the park. This flooding occurs only along a short stretch of the road and should be cured to make the park accessible during high water events. The bluff bank area has eroded over the years and has required removal/relocation or abandonment of several campsites and one well. Potential exists for damage to an existing change shelter. Removal of the existing launch ramp will make the beach area a much safer place to swim and will help control boat traffic in the area which is congested with marina and day use traffic.

I. HOWARD COVE PARK.

Five Year Initial Development	O & M
I.1 Provide concessionaire with option to lease and maintain 12 existing sites or relocate camp units to Gamaliel Park.	$22,300
Work Subtotals	$22,300
Contingency, E&D, and S&A (30%)	6,700
Subtotals	$29,000
Overall Total $29,000	

JUSTIFICATION:

This park does not have terrain suitable for expansion and is only marginally feasible for fee collection without expansion. The concessionaire has expressed an interest in leasing the park with the campsites. This would reduce O & M costs for the project.

J. JORDAN PARK.

Five Year Initial Development	O & M	SRUF	711
I.1 Separate and define camping activities from marina and day use areas. Obliterate and landscape vacated roads.	$103,700		
I.2 Relocate 5 camp units, Restore 17 camp units	61,000		
Renovate existing water system.	31,300		
I.3 Relocate existing picnic shelter to Panther Bay Park.	5,000		
I.4 Expand day use facilities-			
Provide additional parking.		$4,400	
Provide 5 picnic units for day users.		13,300	
Repair beach.	2,000		
I.5 Provide a major entrance station.	120,000		
I.6 Provide 19 Class B+ camp units.		28,000	
I.7 Provide shower facilities to upgrade park to B+.		25,000	
I.8 Expand and stripe boat launch parking area.	7,000		
Vault restroom.			60,000
Work Subtotals	$330,000	$70,700	$60,000
Contingency, E&D, and S&A (30%)	99,000	21,200	18,000
Subtotals	$429,000	91,900	78,000

Overall Total $598,900

JUSTIFICATION: Separation of the camping and day use activities will reduce vehicle traffic in the campground and provide for safer more efficient operation. The high level of pedestrian traffic in the campground mixed with existing vehicle traffic patterns creates a hazardous situation. The soils in this park are very erodible and relocation/restoration of the sites with hardened impact areas is necessary to prevent further erosion and soil compaction. Camping and other uses have increased since the picnic shelter was placed in this park. The shelter is the least necessary of the facilities and should be relocated to provide more room for parking and other activities. The shelter should generate more revenue in the proposed Panther Bay day use area than in the current location. Expansion of the day use area is necessary to fulfill the minimum needs of this park. The shelter meets picnic needs currently but this need could be served more efficiently with separate sites. The beach is usually overcrowded with swimmers and does not have sufficient parking. Expansion of the beach area and parking would alleviate erosion due to parking problems, reduce conflicts between campers and day users, and should make the beach safer for all users. An entrance station complex would provide safer traffic flow in and out of the park, would provide for separation of vehicles and pedestrians, and would provide better control of park access. Additional campsites will alleviate overcrowding and increase fee collections. Shower facilities will upgrade the fee class and increase fee collections. Enlarging the boat launch parking area will reduce maintenance costs by reducing soil erosion and damage to vegetation. This expansion will provide a more efficient traffic pattern and allow better use of the ramp.

K. PANTHER BAY PARK.

Five Year Initial Development	O & M	SRUF	711	OTHER
I.1 Provide a major day use area- Relocate picnic shelter from Jordan Park to area above el. 570.0	$25,000			
Provide 2-6 unit picnic shelters(deferred).				75,000
Provide 8 day use picnic tables.		40,000		
Provide a change house w/vault toilet and showers. Locate above el. 580.0.			60,000	60,000
Provide a major swimming beach.		45,700		
Provide playground facilities.		18,000		
I.2 Relocate 7 camp units above marina to Jordan.	10,500			
I.3 Close launch ramp and expand parking.	15,000			
I.4 Secure camping area during off peak use periods.				
I.5 Restore 7 camp units.	19,700			
Work Subtotals	70,200	103,700	60,000	135,000
Contingency, E&D, and S&A (30 %)	21,100	31,100	18,000	40,500
Subtotals	91,300	134,800	78,000	175,500
Overall Total $479,600				

JUSTIFICATION:

Creation of this major day use area is an anchor point in the plan to distribute park use to allow best use of O & M money on the project. Centralized day use in this area of the lake will reduce day use at several of the larger camping parks nearby. This concentration of use by type and time of day will allow more efficient operation of all the parks involved by reducing the type of use that must be handled in each park. There is no park on the lake that is developed for and devoted only to day use. Most are developed for campers and used for swimming, picnics, and boat launching by day users since these are the only facilities available. This creates traffic problems, parking has taken a lot of area in what should be campgrounds. Dealing with these problems in several parks is inherently less efficient than one large area designed for day use. This park provides easy highway access, is near the population center, and can be easily adapted to provide a controlled setting for creation of a day use area. The campsites are in a separate area of the park and are in need of restoration to provide impact areas which will reduce maintenance costs and preserve the natural resources of the park. Development of this portion of Panther Bay Park will reduce O&M costs in Henderson, Robinson Point, Bidwell Point, Cranfield, and the campground portion of Panther Bay Park. Reduced camping-day use conflict will increase fee collections in the above listed parks. OTHER: One relocated picnic shelter will accomodate use at this stage of development. Another may be required at a later time. The changehouse facility was reduced to toilet only which should meet needs at the proposed level of development.

L. PIGEON CREEK PARK.

Five Year Initial Development (Plate 6-15B)	O & M	SRUF	711
I.1 Relocate existing camp units to east end of park and convert to day use.	$13,500		
I.2 Control vehicular access to cypress grove with barricade and designated parking area.	1,500		
I.3 Remove vault toilet facilities.	1,800		
(Plate 6-16B)			
I.1 Convert unusable launch ramp area to day use beach and provide parking on north side of road.	14,300		
I.2 Relocate 5 existing camp units from west end to area above beach and convert to day use.	5,000		
Provide 1-6 unit picnic shelter and 4 picnic units for day use.		35,600	
I.3 Install change house w/vault toilet and shower facilities above el. 580.0.			60,000
I.4 Provide pedestrian access from road to existing vault toilet.	1,000		
I.5 Provide cypress and sycamore plantings for tree cover.	2,400		
Work Subtotals	39,500	35,600	60,000
Contingency, E&D, and S&A (30 %)	11,800	10,700	18,000
Subtotals	51,300	46,300	78,000

Overall Total $175,600

JUSTIFICATION:

This park has always had a high day use rate in comparison with the camping use it receives. Current day use is scattered over the entire park and not generally of a desirable type. Developed day use facilities will limit the area used thereby reducing cleanup and other maintenance costs. Encouragement of more family type recreation in the park should reduce vandalism and user conflicts while reducing day use in other nearby parks which do not have the terrain or sufficient land to serve the camping demand and development as day use areas. The toilet is necessary for minimum health and safety requirements. Pedestrian access is needed at the toilet near the existing launch ramp to make it more usable. The toilet nearest the entrance needs to be demolished since it serves only as a highway rest stop and as a focal point for illegal activities. The large flat area along the shoreline needs to be planted in water tolerant tree species to provide shade, reduce mowing frequency, and control vehicle use along the shore.

M. QUARRY COVE AND DAM PARK.

Five Year Initial Development	O & M	SRUF
(Plate 6-17B)		
Area A		
I.1 Close area to public use, provide storage area for marina.		
I.2 Provide high water parking.		
Area B		
I.3 Restore 7 existing units and convert to day use, provide a change house above el. 580.0, improve beach facilities and expand parking.	$44,000	20,000
I.4 Relocate 2 existing camp units to area.	6,000	
I.5 Obliterate roads and landscape to improve vehicular circulation.	10,000	
I.6 Maintain open area as playground/day use area.	6,000	
Area C		
I.7 Restore existing camp units and area to a total of 21 units w/electric. 11 existing units 2 units from Area B 8 units from tailwater campgrounds	67,000	
I.8 Maintain as group camping area and playground.	1,000	
(Plate 6-18B)		
I.1 Upgrade existing restroom facilities with showers.		
I.2 Provide landscape planting to screen park from state highway 177.	6,000	
I.3 Provide gravel overflow parking area for campers.	13,000	
I.4 Develop area for overflow day use with controlled access.		
Maintain gravel road and parking area.	6,400	
Obliterate roads and landscape area.	14,000	
Provide 5 picnic table units.		13,300
I.5 Obliterate and realign road, landscaping.	6,400	
I.6 Provide trail along river for bank fishing.		4,500
I.7 Relocate 8 existing camp units to Area C lakeside campgrounds.	15,000	
Work Subtotals	$194,800	37,800
Contingency, E&D, and S&A (30 %)	58,500	11,300
Subtotals	$253,300	49,100

Overall Total $302,400

JUSTIFICATION:

Area A: Closing to public use would reduce O&M costs since mowing, cleanup, and general maintenance would not be performed on this area. The area is lightly used for camping and would be better utilized as storage for the marina. The area also has room and is a good location for high water parking for the marina/launching ramp complex. OTHER: Current policy prohibits development of parking facilities that benefit only marina customers.

Area B: Restoration of the 7 sites and conversion to day use would reduce conflicts between campers and day users. The area is very crowded with day users much of the time. These users spill over into the campsites and create parking problems, traffic hazards, and erosion. Improvement of the beach area, replacement of the change house which was destroyed by high water in 1985, and expanded parking would allow the area to accommodate the number of swimmers and boat launchers now using these facilities while reducing maintenance costs for repair of damage. Separation of use by type should improve efficiency and capacity for providing for each use. Improved traffic management should provide a safer environment for all users.

Area C: Additional sites will increase fee collections at minimum cost since support facilities are already in place. Restoration of existing sites will decrease maintenance costs. The addition of a playground should make the area more attractive to family camping.

Plate 6-18B Screening the park from the highway will improve the park atmosphere, improve traffic safety, and reduce noise in the park. The gravel overflow parking area would correct existing deficiencies in campsite layout by providing space for vehicles that cannot be built into the sites without moving access roads. The overflow day use area would allow existing users to be served but would allow control of the area and times this use would occur. This should reduce O&M costs by reducing litter, vandalism, and damage caused by vehicles. Realignment of the entrance road would provide safer traffic patterns. Converting an old construction roadbed along the river bank into a trail would allow existing users a more safe and controlled access to the river and would allow users who are not as physically able to use the area. Moving the eight existing campsites would place them in an area where they are usable as campsites. These sites are currently used by fishermen as parking. The sites would be moved to areas where they could produce fee revenue. OTHER: Current policy prohibits development of parking facilities that benefit only marina customers. Addition of showers to the existing toilet would not increase fee collections and cannot be economically justified under current guidelines.

N. RED BANK PARK.

	Five Year Initial Development	O & M	SRUF	711
I.1	Relocate existing county road.	$20,000		
I.2	Provide electric to existing campsites.		22,000	
I.3	Provide 15 Class B camp units with electricity.		79,800	
I.4	Provide 3 Class B camp units with electricity.		18,000	
I.5	Improve parking facilities and launch ramp.	10,000		
I.6	Provide high water parking for + 15 cars. with trailers.	11,800		
I.7	Provide trailer dump station.			18,000
I.8	Obliterate and landscape vacated roads.	1,800		
	Vault restroom			60,000
	Well			29,000
	Work Subtotals	$43,600	119,800	107,000
	Contingency, E&D, and S&A (30 %)	13,000	36,000	32,100
	Subtotals	$56,600	155,800	139,100

Overall Total $351,500

JUSTIFICATION: Relocation of the county road that now goes through the park would reduce traffic in the park, reduce user conflicts, and alleviate safety problems. Electricity at the existing and proposed campsites would increase occupancy rates and fee collections. Additional sites would make the park more efficient for fee collection and serve the existing user demand for campsites. The launch ramp is the only ramp serving the main arm of the lake from the east side and is usually in an overflow condition from spring to fall. Improvement of the ramp and parking facilities would make the ramp usable at varying lake levels and increase parking capacity. The trailer dump station would provide a service that is not available nearby and would increase fee collections by raising the campground class. The vault restroom and well are necessary support facilities for the proposed campground expansion. The well will replace an existing hand well with a chlorinated pressure system. The existing well does not provide an adequate safe water supply to serve an expanded campground.

O. ROBINSON POINT PARK.

Five Year Initial Development	O & M	SRUF
Area A		
I.1 Reduce camping congestion and improve auto circulation. Relocate 13 existing camp units and realign road.	76,100	
Obliterate and landscape vacated road and camp sites.	14,000	
Provide 8 new class B+ camp units along new road.		43,000
I.2 Expand beach parking.	11,000	
I.3 Provide overflow parking for cars and trailers (NO COST - included in relocations.)		
I.4 13 relocated class B+ camp units with controlled access.	50,000	
I.5 Restore 54 camp units.	124,000	
I.6 Provide shower facilities to existing vault toilets.		104,000
I.7 Provide 1-1 lane high water launch ramp and parking.	40,000	
Relocate 6 existing camp units to I.10.	28,000	
I.8 Provide parking area for toilets.	4,200	
I.9 Provide cypress and sycamore plantings for tree cover.	3,000	
Area B		
I.10 Provide 15 class B+ camp units with controlled access. 6 units relocated from new launch area. 9 new units.		64,000
I.11 Restore 25 camp units.	66,000	
I.12 Provide cypress and sycamore plantings for tree cover.	5,000	
Water borne restroom with showers.		150,000
Work Subtotals	$418,300	361,000
Contingency, E&D, and S&A (30 %)	$125,500	108,300
Subtotals	$543,800	469,300

Overall Total $1,013,100

JUSTIFICATION:

Area A. The campsites in this park were added over the years as demand increased. The sites are poorly situated, too small for modern RV equipment, too close together, and the associated roads have poor circulation patterns. Relocation and restoration of the campsites will improve safety, increase revenue by increasing the number of sites and raising occupancy rates, and reduce O&M costs by providing impact areas around the sites. The beach area does not have sufficient parking to handle existing traffic. Current parking is unavailable during moderately high lake level. Beach goers use the parking lot as a beach during this period which causes a hazardous situation. Expanded parking would allow separation of the beach and parking area. Shower facilities would make showers available to all users in the park. The existing shower/change house is convenient to the beach and a few campsites. When other campers use the existing shower it compounds the parking and traffic problems in the area. A high water launch ramp is needed to prevent launching from roads and off road areas and the attendant damage caused by parking in damp areas near the lakeside. The original upland tree cover has been killed over the years by high water. Water tolerant species such as cypress and sycamore will provide shade and cover without harm by the higher lake levels.

Area B: The new camp loop is needed to relocate sites from other areas of the park to get campsite density low enough to reduce damage. The additional sites are needed to provide revenue to offset road construction costs. Restoration is needed in this area for the same reasons listed in area A. The water borne toilet with showers would upgrade the campground to Class A and increase fee collections.

P. TALBERT PARK.

Five Year Initial Development	O & M
I.1 Provide barrier guard to redirect vehicular traffic.	$ 3,300
I.2 Improve condition of launch ramp and repave parking area.	12,000
I.3 Expand parking to accommodate high water access to lake.	69,300
Work Subtotals	$84,600
Contingency, E&D, and S&A (30 %)	$25,400
Subtotals	$110,000

Overall Total $110,000

JUSTIFICATION: The barrier is needed to correct straight line path to the lake. The launch ramp has deteriorated over the years and needs rehabilitation to be usable. Expanded parking is needed to meet existing overflow and to provide access during high lake levels.

Q. TECUMSEH PARK.

Five Year Initial Development	O & M	SRUF	711
I.1 Maintain as joint day use/camping area.			
Demolish change house.	2,000		
Relocate existing lake side camp units above el. 570.0.	12,300		
Provide 3 additional day use units.		8,000	
I.2 Stabilize bank to prevent further erosion.	76,000		
I.3 Provide 13 Class D camp units.		42,000	
I.4 Redesign and improve launch ramp and provide parking for cars with trailers.	28,000		
Well			23,000
Work Subtotals	$118,300	50,000	23,000
Contingency, E&D, and S&A (30 %)	35,500	15,000	6,900
Subtotals	$153,800	65,000	29,900

Overall Total $248,700

JUSTIFICATION: The swim beach was removed years ago and the river environment of this park makes construction and maintenance of a beach prohibitively expensive. The lakeside campsites have been subject to damage by high river levels and have a history of high maintenance costs. Relocation to the downstream area would place the sites at a higher elevation in an area protected by the highway bridge fill and abutment. The bank stabilization is required to protect the launching ramp, roads, and other facilities. The additional sites would meet the existing needs for campsites and reduce offsite camping that occurs during much of the early camping season. The existing ramp receives extremely heavy use during the spring and early summer fishing season. A redesign is necessary for safety, to accommodate existing use, and to provide for parking to prevent damage to roads and vegetation. The added sites will make the park feasible as a fee area. The well will replace an existing hand well with a pressurized chlorinated system which will provide a safe adequate water supply for the expanded park.

R. TRACY PARK.

Five Year Initial Development	O & M
I.1 Limit use of park to launching and marina activities. Direct campers to Georges Cove Park.	
I.2 Relocate existing camp units to Georges Cove Park. Obliterate gravel road and landscape.	10,500
I.3 Provide high water parking area.	5,000
I.4 Provide parking and path for launch ramp.	4,000
I.5 Realign road, obliterate and landscape vacated road.	1,500
I.6 Provide marine sanitary station. (done).	
I.7 Provide new road to separate boat launch traffic from marina area.	5,000
Work Subtotals	$26,000
Contingency, E&D, and S&A (30 %)	7,800
Subtotals	$33,800

Overall Total $33,800

JUSTIFICATION: Moving the camp units to Georges Cove will reduce O&M costs and put the sites in a fee area to produce revenue. The gravel road will not be needed after the sites are relocated. High water parking would prevent marina customers from taking up all launching ramp parking space at high lake levels. The parking and path are needed to provide a safe usable parking area for this popular launch ramp. Realignment of the existing entrance/exit road is necessary to prevent traffic to and from private housing just outside the park boundary from using the park road for access. This would reduce traffic in the park and provide a safer traffic flow in and out of the launch area. The separation of marina and boat launch traffic will reduce traffic congestion, improve safety, and reduce user conflicts.

T. WOODS POINT PARK.

Five Year Initial Development	O & M	SRUF	711
I.1 Provide 30 Class B camp units with controlled access and volunteer collection boxes. Relocate 11 existing camp units from launch area.	16,000		
Provide 19 new camp units.		169,200	
Provide vault toilet.			60,000
Expand water system.			31,200
I.2 Demolish existing launch lane and provide 1-2 land launch ramp and parking for 30 cars with trailers.	84,000		
I.3 Provide swimming beach for campers and day users. Provide 1-6 unit picnic shelter and 4 day use/picnic units.		54,900	
Work Subtotals	$100,000	224,100	91,200
Contingency, E&D, and S&A (30 %)	30,000	67,200	27,400
Subtotals	$130,000	291,300	118,600

Overall Total $539,900

JUSTIFICATION: This park has a high level of camping use which is not met by the current number of sites. Relocation of existing sites and addition of the new sites would make fee collection feasible. There is not sufficient space or suitable terrain to develop to the needed level in the existing campground. A new camping area with controlled access would allow closing of the campground during off season and reduce O&M costs. The toilet and water system expansion are needed to meet basic sanitary needs of the new campground. The existing launch ramp is poorly sited and not usable at high or low lake levels. A new ramp with sufficient parking would reduce O&M costs associated with uncontrolled parking. The swim beach and picnic facilities are needed to meet existing demand. The current situation is potentially hazardous with swimmers using the area in and around the launch ramp. Uncontrolled parking and vehicle operation associated with picnicking, swimming, and other day use is causing erosion and damaging trees and other vegetation. The picnic shelter and day use units will reduce O&M cost by concentrating this type of use in a controlled environment and will make more campsites available for fee collections.

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Type of Funding	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	TOTAL
BIDWELL POINT											
O&M GEN.			$30,500								$30,50
SRUF									$33,000		$33,00
CODE 711											$
SUBTOTAL	$0	$0	$30,500	$0	$0	$0	$0	$0	$33,000	$0	$63,50
BUZZARD ROOST											
O&M GEN.				$158,500							$158,50
SRUF											$
CODE 711											$
SUBTOTAL	$0	$0	$0	$158,500	$0	$0	$0	$0	$0	$0	$158,50
CRANFIELD											
O&M GEN.	$489,700										$489,70
SRUF											$
CODE 711											$
SUBTOTAL	$489,700	$0	$0	$0	$0	$0	$0	$0	$0	$0	$489,70
CURLEY POINT											
O&M GEN.			$65,200								$65,20
SRUF											$
CODE 711											$
SUBTOTAL	$0	$0	$65,200	$0	$0	$0	$0	$0	$0	$0	$65,20
GAMALIEL											
O&M GEN.	$320,500	$146,800									$467,3
SRUF	$127,300	$232,700									$360,00
CODE 711	$78,000										$78,00
SUBTOTAL	$525,800	$379,500	$0	$0	$0	$0	$0	$0	$0	$0	$905,30
GEORGES COVE											
O&M GEN.							$251,800				$251,80
SRUF								$162,500	$103,700		$266,20
CODE 711											$
SUBTOTAL	$0	$0	$0	$0	$0	$0	$251,800	$162,500	$103,700	$0	$518,00
HAND COVE											
O&M GEN.			$9,300								$9,30
SRUF											$
CODE 711											$
SUBTOTAL	$0	$0	$9,300	$0	$0	$0	$0	$0	$0	$0	$9,30

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Type of Funding	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	TOTAL
HENDERSON											
O&M GEN.		$263,800									$263,800
SRUF											$0
CODE 711		$78,000									$78,000
SUBTOTAL	$0	$341,800	$0	$0	$0	$0	$0	$0	$0	$0	$341,800
HOWARD COVE											
O&M GEN.	$29,000										$29,000
SRUF											$0
CODE 711											$0
SUBTOTAL	$29,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$29,000
JORDAN											
O&M GEN.		$429,000									$429,000
SRUF				$91,700							$91,700
CODE 711		$78,000									$78,000
SUBTOTAL	$0	$507,000	$0	$91,700	$0	$0	$0	$0	$0	$0	$598,700
PANTHER BAY											
O&M GEN.			$91,300								$91,300
SRUF			$134,800								$134,800
CODE 711			$78,000								$78,000
SUBTOTAL	$0	$0	$304,100	$0	$0	$0	$0	$0	$0	$0	$304,100
PIGEON CREEK											
O&M GEN.			$51,300								$51,300
SRUF					$46,300						$46,300
CODE 711			$78,000								$78,000
SUBTOTAL	$0	$0	$129,300	$0	$46,300	$0	$0	$0	$0	$0	$175,600
QUARRY COVE											
O&M GEN.			$253,300								$253,300
SRUF			$49,100								$49,100
CODE 711											$0
SUBTOTAL	$0	$0	$302,400	$0	$0	$0	$0	$0	$0	$0	$302,400
RED BANK											
O&M GEN.				$56,600							$56,600
SRUF				$155,800							$155,800
CODE 711	$61,100			$78,000							$139,100
SUBTOTAL	$61,100	$0	$0	$290,400	$0	$0	$0	$0	$0	$0	$351,500

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Type of Funding	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	TOTAL
ROBINSON POINT											
O&M GEN.					$543,800						$543,800
SRUF							$83,200		$135,200	$250,900	$469,300
CODE 711											$0
SUBTOTAL	$0	$0	$0	$0	$543,800	$0	$83,200	$0	$135,200	$250,900	$1,013,100
TALBERT											
O&M GEN.				$110,300							$110,300
SRUF											$0
CODE 711											$0
SUBTOTAL	$0	$0	$0	$110,300	$0	$0	$0	$0	$0	$0	$110,300
TECUMSEH											
O&M GEN.				$153,800							$153,800
SRUF					$65,000						$65,000
CODE 711		$29,900									$29,900
SUBTOTAL	$0	$29,900	$0	$153,800	$65,000	$0	$0	$0	$0	$0	$248,700
TRACY											
O&M GEN.			$33,800								$33,800
SRUF											$0
CODE 711											$0
SUBTOTAL	$0	$0	$33,800	$0	$0	$0	$0	$0	$0	$0	$33,800
UDALL											
O&M GEN.				$72,800							$72,800
SRUF					$132,600						$132,600
CODE 711				$23,400							$23,400
SUBTOTAL	$0	$0	$0	$96,200	$132,600	$0	$0	$0	$0	$0	$228,800
WOODS POINT											
O&M GEN.						$130,000					$130,000
SRUF						$127,500	$163,800				$291,300
CODE 711						$118,600					$118,600
SUBTOTAL	$0	$0	$0	$0	$0	$376,100	$163,800	$0	$0	$0	$539,900

	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	TOTAL
O&M GEN.	$839,200	$839,600	$534,700	$552,000	$543,800	$130,000	$251,800	$0	$0	$0	$3,691,100
SRUF	$127,300	$232,700	$183,900	$247,500	$243,900	$127,500	$247,000	$162,500	$271,900	$250,900	$2,095,100
CODE 711	$139,100	$185,900	$156,000	$101,400	$0	$118,600	$0	$0	$0	$0	$701,000
TOTALS	$1,105,600	$1,258,200	$874,600	$900,900	$787,700	$376,100	$498,800	$162,500	$271,900	$250,900	$6,487,200

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SUMMARY LISTING BY FISCAL YEAR

FY 90	O&M GEN.	SRUF	CODE 711	PARK TOTALS
CRANFIELD	$489,700			$489,700
GAMALIEL	$320,500	$127,300	$78,000	$525,800
HOWARD COVE	$29,000			$29,000
RED BANK			$61,100	$61,100
FUND TOTALS	$839,200	$127,300	$139,100	$1,105,600

FY 91	O&M GEN.	SRUF	CODE 711	PARK TOTALS
GAMALIEL	$146,800	$232,700		$379,500
HENDERSON	$263,800		$78,000	$341,800
JORDAN	$429,000		$78,000	$507,000
TECUMSEH			$29,900	$29,900
FUND TOTALS	$839,600	$232,700	$185,900	$1,258,200

FY 92	O&M GEN.	SRUF	CODE 711	PARK TOTALS
BIDWELL POINT	$30,500			$30,500
CURLEY POINT	$65,200			$65,200
HAND COVE	$9,300			$9,300
PANTHER BAY	$91,300	$134,800	$78,000	$304,100
PIGEON CREEK	$51,300		$78,000	$129,300
QUARRY COVE	$253,300	$49,100		$302,400
TRACY	$33,800			$33,800
FUND TOTALS	$534,700	$183,900	$156,000	$874,600

FY 93	O&M GEN.	SRUF	CODE 711	PARK TOTALS
BUZZARD ROO	$158,500			$158,500
JORDAN		$91,700		$91,700
RED BANK	$56,600	$155,800	$78,000	$290,400
TALBERT	$110,300			$110,300
TECUMSEH	$153,800			$153,800
UDALL	$72,800		$23,400	$96,200
FUND TOTALS	$552,000	$247,500	$101,400	$900,900

FY 94	O&M GEN.	SRUF	CODE 711	PARK TOTALS
PIGEON CREEK		$46,300		$46,300
ROBINSON POINT	$543,800			$543,800
TECUMSEH		$65,000		$65,000
UDALL		$132,600		$132,600
FUND TOTALS	$543,800	$243,900	$0	$787,700

FY 95	O&M GEN.	SRUF	CODE 711	PARK TOTALS
WOODS POINT	$130,000	$127,500	$118,600	$376,100

FY 96	O&M GEN.	SRUF	CODE 711	PARK TOTALS
GEORGES COVE	$251,800			$251,800
ROBINSON POINT		$83,200		$83,200
WOODS POINT		$163,800		$163,800
FUND TOTALS	$251,800	$247,000	$0	$498,800

FY 97	O&M GEN.	SRUF	CODE 711	PARK TOTALS
GEORGES COVE		$162,500		$162,500

FY 98	O&M GEN.	SRUF	CODE 711	PARK TOTALS
BIDWELL POINT		$33,000		$33,000
GEORGES COVE		$103,700		$103,700
ROBINSON POINT		$135,200		$135,200
FUND TOTALS	$0	$271,900	$0	$271,900

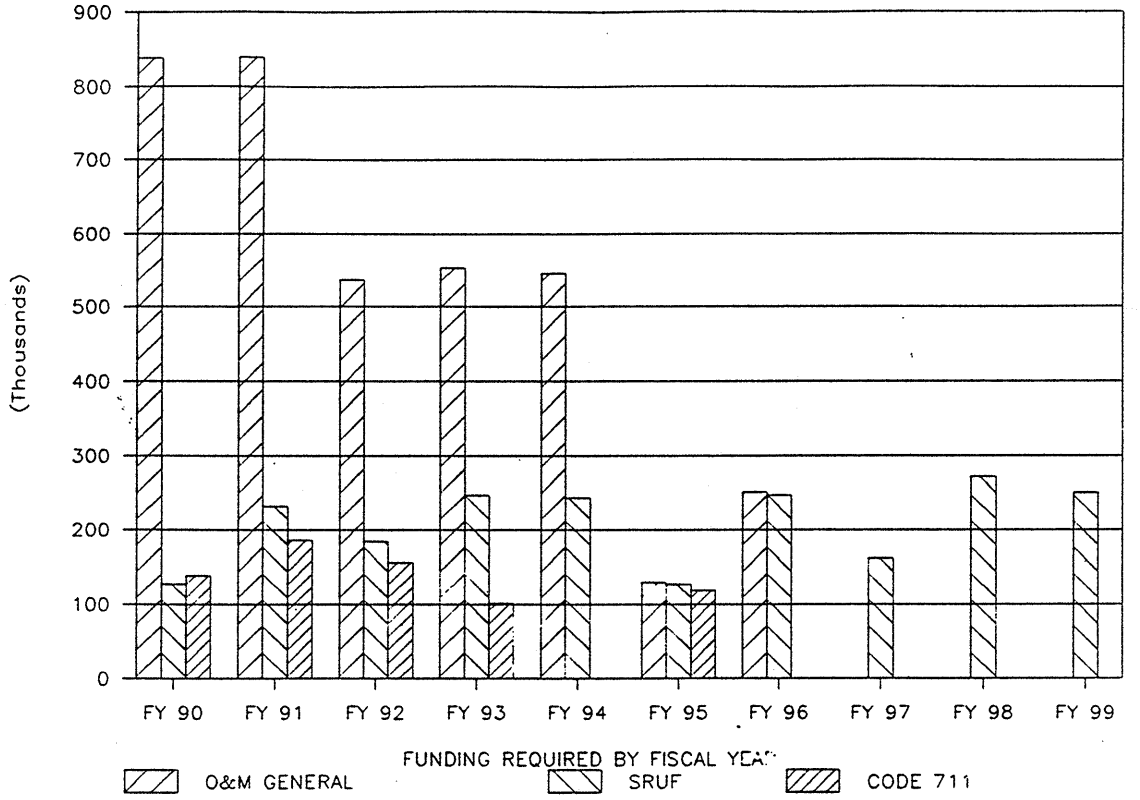
FY 99	O&M GEN.	SRUF	CODE 711	PARK TOTALS
ROBINSON POINT		$250,900		$250,900

OTHER (DEFERRED COSTS BY PARK)

CRANFIELD	$15,600
GAMALIEL	$97,500
PANTHER BAY	$175,500
TOTAL	$288,600

NORFORK LAKE MASTER PLAN

IV. SCHEDULE OF DEVELOPMENT



Mr. Koechley/bre/73045

CESWD-PL-R (CESWL-PL/19 Nov 87) (335-2-5c) 3d End
SUBJECT: Norfork Lake, North fork River, Arkansas and Missouri, Design Memorandum No. 1-E, Updated Master Plan for Development and Management of Norfork Lake

Cdr, Southwestern Division, Corps of Engineers, 1114 Commerce St., Dallas, TX 75242-0216 23 AUG 1988

FOR: Commander, Little Rock District, ATTN: ~~CESWL-P~~ B8/29

The subject master plan is approved.

FOR THE COMMANDER:

for Jerrell Sartor

BARRY G. ROUGHT, P.E.
Chief, Planning Division

3 Encls
nc

CF:
CECWO-R (w/encls)

CESWL-PL-A (CESWL-PL/19 Nov 87) (335-2-5c) 2nd End
SUBJECT: Norfork lake, North Fork River, Arkansas and Missouri, Design Memorandum No. 1-E, Updated Master Plan for Development and Management of Norfork Lake.

Cdr, Little Rock District, CE, P.O. Box 867, Little Rock, Arkansas 72203-0867. Attn: CESWD-PL-R 13 JUL 1988

For: Commander, Southwestern Division, CE, 1114 Commerce St., Dallas, Texas 75242-0216

Enclosed is a response to 1st End comments and 5 copies of the master plan.

FOR THE COMMANDER:

David L. Burrough

DAVID L. BURROUGH
Chief, Planning Division

Encls

LRD RESPONSE TO SWD COMMENTS
Norfork Lake Master Plan
DM No. 1-E

1. Change made.

2. Change made.

3. Change made.

4. Response - Management of cultural resources will be fully addressed in the Historic Properties Management Plan (HPMP) scheduled for completion in 1989. The HPMP will be in full compliance with ER1130-2-438, section 11. The District Priority Plan required by section 10.c. of this regulation was submitted to SWD in Jule 1988. Am assessment of previous work at Norfork Lake and a preliminary program for future work was included. Subject to the availability of operation and maintenance funding, an intensive archeological survey will be performed during late summer, 1988. A predictive model for the distribution of sites at the lake will also be created.

5. Noted.

6. Response - Chapters 2 and 3 are titled "Natural Resource Analysis" and Cultural Resource Analysis", respectively. These chapters contain both positive and negative observations about these resources. In Chapter 7 it is explained that all the resource plans will be updated and put into one report, the Operational Management Plan (OMP). Due to fund limitations and the forthcoming OMP, the existing resource plans were not updated. Also, since there are several of the plans, inclusion of them with the master plan would be costly. The text has been changed to refer the reader to the existing plans.

7. Text revised.

8. Change made.

9. No action required.

10. Typical plans were originally included in the scope of work, but were taken out during negotiations as a cost saving feature. Since the master plan is concepts and the text expresses natural plantings be used, it was determined that typical plans were not required.

11. Change made.

12. The 1972 Land Use Plan has been included in the plan.

13. Change made.

14. Funding priority plan submitted as requested.

Encl 3

Mr. Koechley/fao/7-3045

CESWD-PL-R (CESWL-PL/19 Nov 87) (335-2-5c) 1st End
SUBJECT: Norfork Lake, North Fork River, Arkansas and Missouri, Design Memorandum No. 1-E, Updated Master Plan for Development and Management of Norfork Lake

Cdr, Southwestern Division, Corps of Engineers, 1114 Commerce St., Dallas, Texas 75242-0216 16 Feb 1988

FOR: Commander, Little Rock District, Corps of Engineers
ATTN: CESWL-~~PL~~ 2/19/88

The subject master plan is approved, except for necessary revisions to those segments covered by the enclosed comments.

FOR THE COMMANDER:

William R. Pearson

for BARRY G. ROUGHT, P.E.
Chief, Planning Division

Encl

CF:
CEDAEN-CWO-R

SWD COMMENTS
Norfork Lake Master Plan
DM No. 1-E

1. 1-03 - Page 1. The first paragraph states that the prior Master Plan was approved in December 1972, while table 1-01 states February 1974. The discrepancy should be corrected.

2. 1-03 - Page 3. The second paragraph addresses the Fish and Wildlife Conservation Act. This should be the Fish and Wildlife Coordination Act.

3. 2-08. Terrestrial Vegetation. There are several spelling errors in the plant list. Adropogon should be Andropogon, Platous occidentalis should be Platanus occidentalis and Acer saccharinun should be Acer saccharinum.

4. Chapter 3 - Cultural Resource Analysis. This section does not conform to Master Plan level concepts for Archeological-Historical resources, as prescribed in ER 1130-2-438. What is proposed conceptually for management of the cultural resources? Resource use objectives should be included in this chapter as they should for recreation, wildlife or other natural resources.

5. Coordination with other agencies. The Missouri Department of Conservation, in their letter of response to the contractor's request for information and concerns, mentioned several concerns. The contractor's response was not entirely appropriate. For example, one recommendation was to manage project lands to minimize soil erosion (at or below "T") and enhance aesthetic values. The response was that these issues are generally beyond the scope of the Corps' master planning process. However, they will be considered and discussed as part of the Operational Management Plan to be prepared after the Master Plan is completed. In future efforts of this type, the Corps should be sufficiently involved with the contractor's public coordination efforts so that their responses are accurate and appropriate.

6. Natural Resource Management, General.

- Paragraph 6-02 states that the scope of work for this Master Plan did not include analysis or updating of land and water use areas, or the preparation of a "Resource Use Plan", as described in Draft ER 1130-2-435. It further stated that these elements may be added to the plan at a later date, and that the prior land use plan prepared in 1972 shall remain in force.

- Paragraph 7-02 states that an Operational Management Plan shall be prepared for the project following approval of the Master Plan.

Encl 2

- Objective 7, page 53, states: "Adopt a management program which will continue to provide for enhancement and use of forest, fish, and wildlife resources at Norfork Lake".

In each of these paragraphs, despite stated intention to manage the natural resources, there was no analysis included to determine the condition of the resources, or if the conceptual plans developed for their management in the previous Master Plan are still appropriate. Before that determination can be made, an analysis must be completed. If indeed, the previous plans are appropriate, they should be included in this master plan, for ready reference by the reviewer, the master plan user and those who will prepare the Operational Management Plans. If the concepts contained in the previous Master Plan are no longer considered valid, the conceptual plans should be revised. It is suggested that Resource Use Objectives be identified for this section that are specific to the Norfork Lake project as a means to improve the quality and usefulness of the Master Plan. The Master Plan is the cornerstone document to guide the use, development and management of all resources administered by the Corps at Norfork Lake.

7. 6-05. Future Recreation Areas. This document describes four park areas to be held in reserve as potential recreation areas until their development is warranted. The Master Plan should discuss what potential uses these areas may have, and what sort of development is contemplated. What should the interim uses be, how will these areas be managed until they are needed for future recreation development?

8. 6-06. Page 103. Subparagraph B, mentions the Cherokee's forced march from Florida to western Arkansas and Oklahoma. The Cherokee march was from the Carolinas, and Eastern Tennessee, not Florida. This should be corrected.

9. Photograph 6-07. Was this photograph selected to illustrate the pitfalls of using the natural gravel beach for boat access? The boat pictured appears to be sunk.

10. Photograph 6-45. Caption states that Landscape plantings...would greatly enhance the appearance of the facility. How should this be accomplished? Typical plans should be referenced here.

11. 6-11. Project signs. Last paragraph states that signage should conform to the Ohio River Division sign manual, ORDR 1130-2-42. This should be changed to reference the Corps of Engineers Sign Standards, EP 310-1-6 a., and b., Corps of Engineers Graphic Standards Manuals and EC 1130-2-200.

12. Land Allocation, general. The leading sentence in Attachment B, Norfork Lake Land Use Plan, states that the land use plan was not updated as part of this master planning effort

and that the existing (1972) plan will be used until a major land use update is required. Some observations and recommendations are provided for the revised allocation plan, whenever it is done. A basic requirement in land resource management is to delineate and designate the areas for their best uses. If the 1972 plan is appropriate, the plan should so state, with the map and allocations provided. If it is not appropriate, a new allocation plan should be developed and provided.

13. All the park plates are placed at the back of the Master Plan. The park plates showing the development plans and the composite analysis maps should be inserted with the corresponding park general description and site analysis paragraph 6-04-E.

14. Reference paragraph 6-07. The District has proposed a development program that will require the use of a large amount of Special Recreation User Fee (SRUF) funds and O&M funds. Some of the proposed features cannot be added without cost-sharing, and presently there is no sponsor. It is more economical to do all the construction (relocation and new facilities) at the same time in each area. This is especially true when we are separating uses to reduce conflicts. Before plans and specifications are started, the District should supplement the existing Appendix A to the master plan. This should include the type of funding that will be required for the facilities in each park. A construction priority should also be included. In this regard, it is recommended that priorities be set, if possible, so as to complete one park at a time. Since SRUF funds are limited, plans and specifications should only be completed on the areas considered high priority.

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

CESWL-PL (335-2-5c) 19 November 1987

MEMORANDUM FOR: Commander, Southwestern Division

SUBJECT: Norfork Lake, North Fork River, Arkansas and Missouri, Design Memorandum No. 1-E, Updated Master Plan for Development and Management of Norfork Lake

Design Memorandum No. 1-E, which was prepared by Harland Bartholomew and Associates, Inc., of St. Louis, Missouri, under Contract No. DACW03-86-C-0074, is submitted for your approval.

Encl (5 cys)

LTC, CE
ANTHONY V. NIDA
Colonel, Corps of Engineers
Commanding