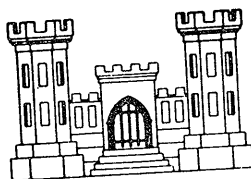


ARKANSAS RIVER WATERSHED
BLUE MOUNTAIN LAKE

PETIT JEAN RIVER
ARKANSAS

DESIGN MEMORANDUM NO. 1-C
UPDATED MASTER PLAN
FOR
DEVELOPMENT AND MANAGEMENT OF
BLUE MOUNTAIN LAKE



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
LITTLE ROCK, ARKANSAS
FEBRUARY 1975

PREPARED BY
RAY H. RUSSELL
CONSULTING ENGINEER
LITTLE ROCK, ARKANSAS

ARMY-LITTLE ROCK, ARK.

CESWD-CO-RP (CESWL-CO-L/12 Jun 89) (1130a) 1st End Mr. McCauley/
te/767-2434
SUBJECT: Blue Mountain Lake, Master Plan, Supplement No. 5

CDR, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75242-0216 17 JUL 1989

✓ FOR CDR, Little Rock District, ATTN: CESWL-CO-L

Approved, subject to the following comment:

An archeological site on this acreage is currently being tested for significance. While it does not appear to be a problem, leasing actions should address the issue and results of testing for compliance with Real Estate and Cultural Resources regulations.

FOR THE COMMANDER:

3 Encls
wd



GENE R. DRETKE, P.E.
Acting Chief, Construction-
Operations Division

CF (w/basic & encl):
CECW-ON
CESWD-PL
CESWD-RE



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

CESWL-CO-L (1130)

12 JUN 1989

MEMORANDUM FOR Commander, Southwestern Division, ATTN: CESWD-CO-R

SUBJECT: Blue Mountain Lake, Master Plan, Supplement No. 5

1. The purpose of this supplement is to reallocate approximately 40 acres of Project Operations: Recreation-Low Density Use to an allocation of Project Operations: Recreation-Intensive Use. Logan County, Arkansas, has requested to lease this parcel of land for a period of 25 years for the purpose of establishing a recreational facility. The parcel is located in Section 35, Township 6N, Range 27W, Logan County, about 1 mile west of Magazine, Arkansas, on Highway 10 (See enclosed exhibit).
2. The recreational facility is designed to serve all citizens in Logan County. It would be administered by Petit Jean-Mt. Magazine Sports and Recreation Association, Inc., under a sublease agreement. Tentative plans for development include construction of roads, parking lots, three ball fields, bleachers, concession stand, restroom facilities, playground, picnic area, and night lights. A sketch of the proposed facility is enclosed. The Logan County Quorum Court has voted to support the project as a county leased area, if approved. Approval of the financial, development, and management plans for this area will be required prior to leasing the land.
3. This parcel is currently included in a license agreement with the Arkansas Game and Fish Commission. Mr. Steve Wilson, Director, Arkansas Game and Fish Commission, has furnished a letter stating that they have no objection to our leasing the parcel to Logan County for recreational purposes. A copy of his letter is enclosed. Also, an existing agricultural lease with Ms. Naomi Gilbert will be cancelled.
4. Approval of this supplement is recommended.

3 Encls (4 cys)

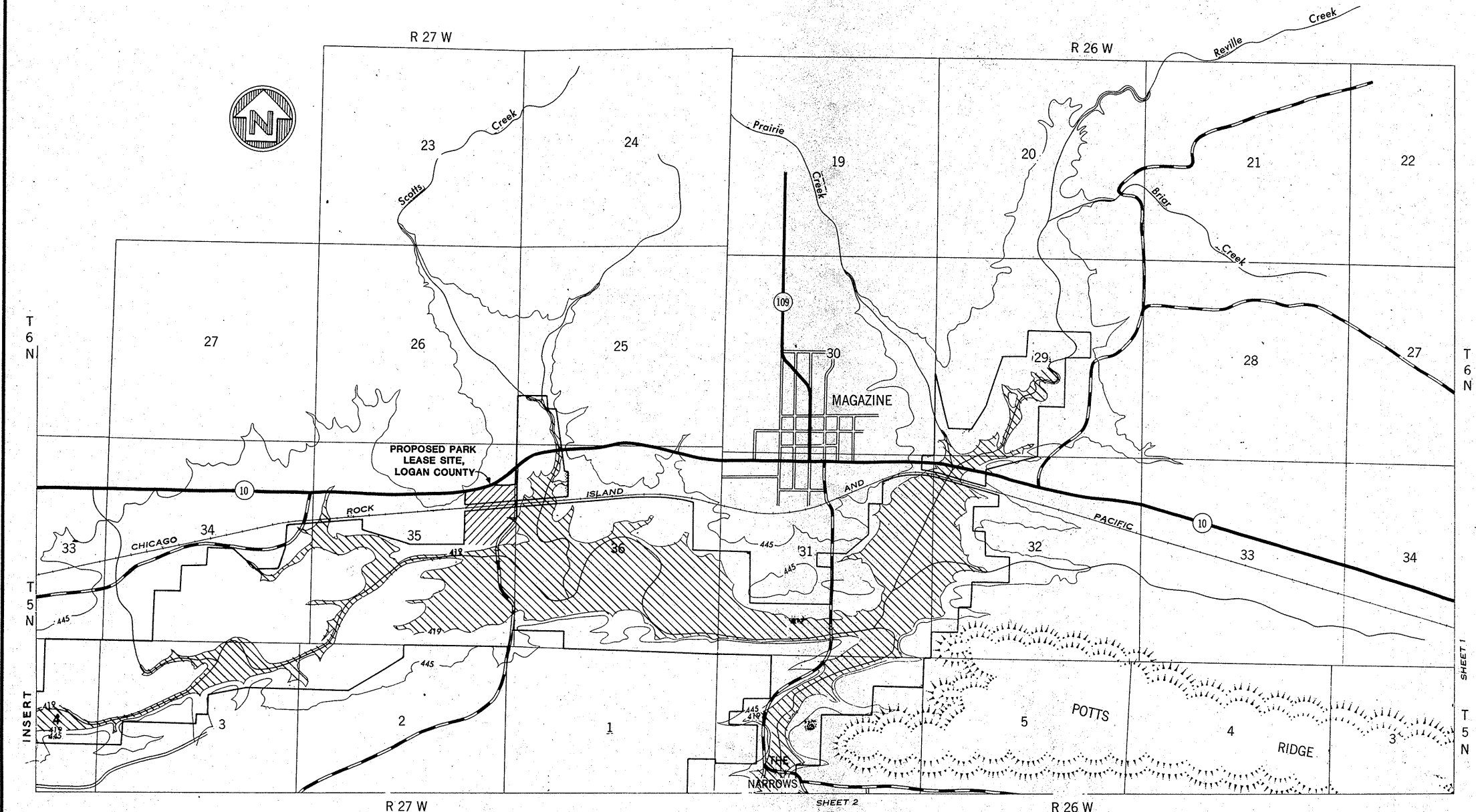
ANTHONY V. NIDA
Colonel, Corps of Engineers
Commanding

LEGEND

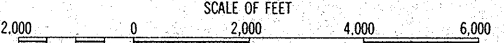
- Project Operations
- Project Operations: Recreation-Intensive use
- Operations: Recreation-Intensive use
- Project Operations: Recreation-Low density use
- Operations: Recreation-Low density use
- Operations: Natural area
- Project Operations: Dam appurtenant works
- Trail (Proposed)
- Trail (Existing)
- State highway
- Paved road
- Graveled road
- Graded road
- Fee acquisition line

PERTINENT ELEVATIONS (MSL)

- 445 Spillway design flood
- 419 Flood control pool
- 384 Top of conservation pool



ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
MASTER RECREATION PLAN
BLUE MOUNTAIN LAKE
LAND USE MAP



U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK ARKANSAS, FEB. 1975
REVISED JUNE 1989

SHEET NO. 3

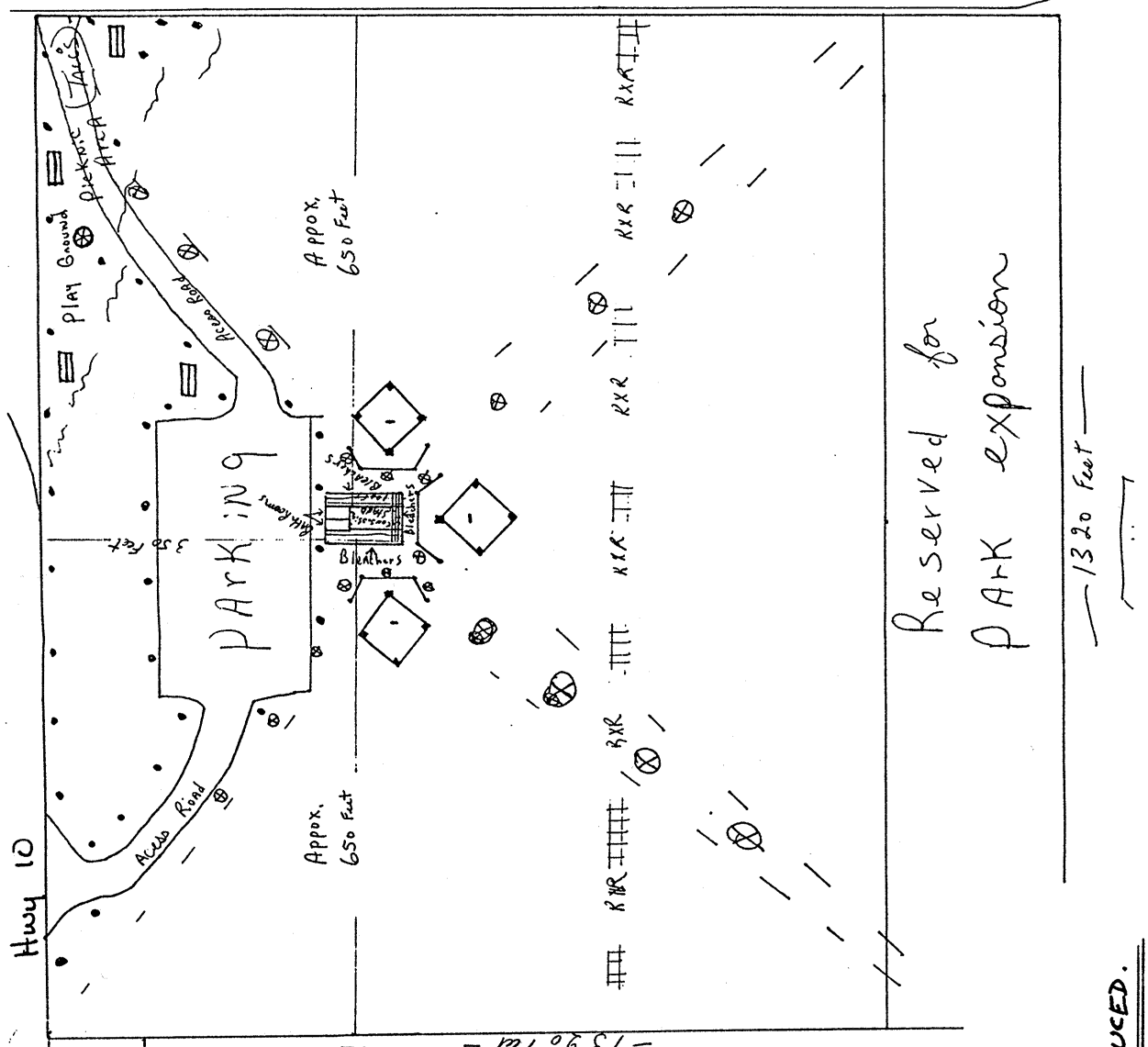
Scale $\frac{3}{4}" = 100 \text{ Ft}$ True •
TALKS
LIGHTS

40 Acres in
SE $\frac{1}{4}$ of
N.E. $\frac{1}{4}$ of Sec. 35
Township 6 North Range 27 West.
1 - 50' X 100' Steel Building

West
Old Rail Road Bed
R R R # #
- 1320 Feet -

Don't Jean - Mt Magazine
Little League Out Park
Association

NOTE:
THIS SKETCH HAS BEEN REDUCED.



Arkansas Game & Fish Commission



May 22, 1989

Mr. William D. DeBusk
Chief, Real Estate Division
Little Rock District, Corps of Engineers
P.O. Box 867
Little Rock, AR 72203

Dear Mr. DeBusk:

In reference to your letter of May 9, 1989, the Arkansas Game and Fish Commission has no objection to the County of Logan using a portion of the area liscensed to the Commission under Number DACW03-3-88-201 on Blue Mountain Lake.

The use of the designated 40 acre tract by the county, for recreational purposes, will in no way interfere with the use of the contiguous area for wildlife management.

Steve N. Wilson, Director
Arkansas Game and Fish
Commission

SNW/JH/nkb

REPRODUCED AT GOVERNMENT EXPENSE

CESWD-CO-RR (CESWL-CO-L/3 May 88)(1130) 1st End Goodknight/da/72436
SUBJECT: Blue Mountain Dam and Lake, Petit Jean River, Arkansas,
Supplement 1 to Appendix D, Fish and Wildlife Management Plan, to
Design Memorandum No. 1-C, Updated Master Plan

Commander, Southwestern Division, Corps of Engineers, 1114 Commerce
Street, Dallas, Texas 75242-0216 24 MAY 1988

FOR: Commander, Little Rock District, ATTN: CESWL-CO-L

Subject plan is approved.

FOR THE COMMANDER:

Encl wd



GENE R. DRETKE
Acting Chief, Construction-
Operations Division

CF (w/encl):
CECW-ON



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 667
LITTLE ROCK, ARKANSAS 72203-0867

CESWL-CO-L (1130)

3 May 1988

MEMORANDUM FOR: Commander, Southwestern Division, ATTN: CESWD-CO-R

SUBJECT: Blue Mountain Dam and Lake, Petit Jean River, Arkansas, Supplement 1
to Appendix D, Fish and Wildlife Management Plan, to Design Memorandum
No. 1-C, Updated Master Plan.

The enclosed subject supplement is submitted for review and approval in
accordance with ER 1130-2-400.

Encl (5 cys)

A handwritten signature in cursive script, reading "Anthony V. Nida", is written over the typed name.

ANTHONY V. NIDA
Colonel, Corps of Engineers
Commanding

SWDCO-RP (SWLCO-L/13 Feb 87) 1st End
SUBJECT: Blue Mountain Lake, Updated Master Plan, Design
Memorandum No. 1-C, Supplement No. 4

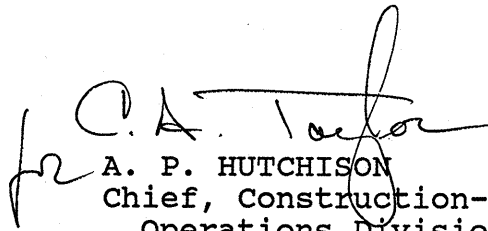
DA, Southwestern Division Corps of Engineers, 1114 Commerce
Street, Dallas, TX 75242-0216 4 MAR 1987

TO: Commander, Little Rock District, ATTN: SWLCO-L

Approved.

FOR THE COMMANDER:

2 Encls wd


A. P. HUTCHISON
Chief, Construction-
Operations Division

CF (w/basic & Encls):
DAEN-CWO-R (5 cys)



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

SWLCO-L


13 FEB 1987

SUBJECT: Blue Mountain Lake, Updated Master Plan, Design Memorandum No. 1-C,
Supplement No. 4

Commander, Southwestern Division
ATTN: SWDCO-R

1. The purpose of this supplement is to reallocate approximately 750 acres of Project Operations: Recreation-Low Density land to an allocation of Operations: Wildlife Management. The Arkansas Game and Fish Commission has requested that this land be added to their license in accordance with the Fish and Wildlife Coordination Act of 1958.
2. The land will be added to their license for intensive wildlife management purposes that will benefit both game and non-game species. The addition of this land to their license will allow the Arkansas Game and Fish Commission to manage all of the lands on the south side of the lake between Hise Hill Park and the dam for wildlife management. This will better serve their goal of providing the public with quality recreational opportunities.
3. Approval of this supplement is recommended.

2 Encls (9 cys)


ROBERT W. WHITEHEAD
Colonel, Corps of Engineers
Commanding

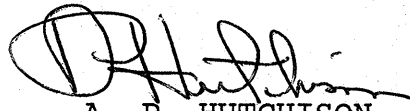
SWDCO-RR (SWLCO-L/29 Jan 87) 1st End
SUBJECT: Blue Mountain Lake, Updated Master Plan, Design
Memorandum No. 1-C, Supplement No. 3

DA, Southwestern Division, Corps of Engineers, 1114 Commerce
Street, Dallas, TX 75242-0216 12 FEB 1987

TO: Commander, Little Rock District, ATTN: SWLCO-L

Approved.

FOR THE COMMANDER:



A. P. HUTCHISON
Chief, Construction-
Operations Division

CF w/basic):
DAEN-CWO-R (5 cys)



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

SWLCO-L


29 January 1987

SUBJECT: Blue Mountain Lake, Updated Master Plan, Design Memorandum No. 1-C,
Supplement No. 3

Commander, Southwestern Division
ATTN: SWDCO-R

1. The purpose of this supplement is to alter the lake level manipulation plan for Blue Mountain Lake for a period of 2 years. This action is being done at the request of the Arkansas Game and Fish Commission to enhance the fisheries of the lake. The lake will be managed to maintain the conservation pool at elevation 384.0 msl from October 1 until March 15 during the years of 1986-87 and 1987-88. The present practice is to raise the conservation pool to elevation 387.0 beginning 1 March of each year.
2. The Arkansas Game and Fish Commission believes that this water level manipulation will help the fisheries in Blue Mountain Lake in several ways:
 - a. Provide opportunity to the public and organizations to fully utilize the facilities at the Blue Mountain Lake Wildlife Management Area.
 - b. Allow the Arkansas Game and Fish Commission to construct an access ramp and parking area for use by the public.
 - c. Improve the spawning habitat during the spring of each year.
 - d. Enhance the success of a special commercial fishing season that the Arkansas Game and Fish Commission has declared for Blue Mountain Lake during the lake level manipulation.
 - e. Allow the Arkansas Game and Fish Commission to evaluate the fisheries of the lake for future management needs.
3. This water level management action is not expected to have any adverse effect on the recreational usage of the project during the manipulation. Future recreational usage of the project is expected to increase as a result of the improved fisheries in the lake.

FOR THE COMMANDER:


FOR JAMES W. MARLOW
Chief, Construction-Operations
Division

SWDCO-RP (SWLCO-L/30 Jan 86) 3rd End
SUBJECT: Blue Mountain Lake, Updated Master Plan, Design
Memorandum No. 1-C, Supplement No. 2

DA, Southwestern Division, Corps of Engineers, 1114 Commerce
Street, Dallas, TX 75242-0216

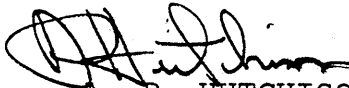
20 MAR 1986

TO: Commander, Little Rock District, ATTN: SWLCO-L

Approved.

FOR THE COMMANDER:

3 Encls
wd all encls


A. P. HUTCHISON
Chief, Construction-
Operations Division

CF (w/2d End & Encl 3):
DAEN-CWO-R (5 cys)

SWLRE-M/SWLCO-L (SWLCO-L 30 Jan 86) 2d End

Mr. Ragar/vlr/740-5716

SUBJECT: Blue Mountain Lake, Updated Master Plan, Design Memorandum No. 1-C,
Supplement No. 2

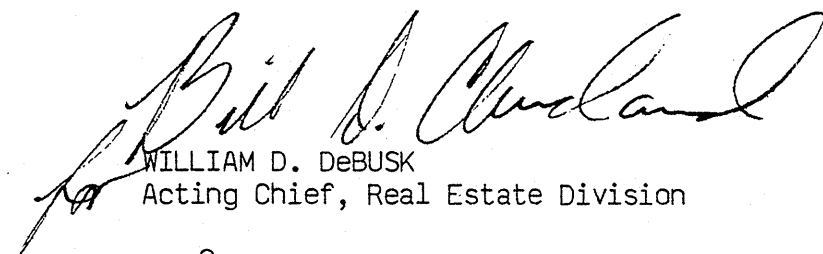
DA, Little Rock District, Corps of Engineers, P.O. Box 867, Little Rock,
Arkansas 72203-0867 13 March 1986

TO: Commander, Southwestern Division
ATTN: SWDCO-R

1. The Arkansas Game and Fish Commission has a license for fish and wildlife management purposes on 4,500 acres. The Commission has requested an additional 5,360 acres be added to their license.
2. The Commission is an autonomous agency with the authority to expend money on improvements which they have under license or lease. The Commission has authorized \$133,000 for expenditure on the lands currently under license and on the requested area. Bids are currently being solicited on improvements with an estimated value of \$83,000. The Commission has begun intensive managements on the lands currently under license. Wildlife habitat improvements valued at \$50,000 have been funded.
3. Wildlife habitat improvements will benefit all species of wildlife, but the featured species will be bobwhite quail. The area will be opened to the public for year-around training of hunting dogs and will be designated as a wildlife management area. Hunting seasons will be set. It is anticipated that deer hunting will not be allowed for several years until the herd reaches a suitable population.
4. The Commission will hold field trials for quail, fox, coyote, and waterfowl on the area. The stable is needed for temporary storage of horses to be used for all but the waterfowl trials. The equipment building is needed to store equipment to work on the area, the residence (mobile home) is needed for surveillance and protection, and the community building is needed in connection with field trials and for public service activities. Under Arkansas law, all persons born on or after January 1, 1969, must successfully complete a Hunter Education Course before they can purchase a license. The area and community building will also be used for hunter education for this portion of the State.
5. Enclosed are plans and specifications of structures proposed in the initial development (Encl 1) and a March 7, 1986, letter from the Arkansas Game and Fish Commission addressing funding and other structures (Encl 2).
6. Recommend the zoning be approved and we be authorized to amend the existing license to include the additional 5,360 acres.
7. Supplement 2 to the Updated Master Plan of Blue Mountain Lake did not include an area that is part of the 4,500 acres of land currently licensed to the Commission. A revised Plate 3 (Encl 3, 9 copies) is herein submitted to correct this omission. The total acreage reallocated from Project Operations Recreation-low Density to Operations Wildlife Management is increased from 8,143 to 9,860 as a result of this action.

FOR THE COMMANDER:

3 Encls


WILLIAM D. DeBUSK
Acting Chief, Real Estate Division

SWDCO-RP (SWLCO-L/30 Jan 86) 1st End
SUBJECT: Blue Mountain Lake, Updated Master Plan, Design
Memorandum No. 1-C, Supplement No. 2

DA, Southwestern Division, Corps of Engineers, 1114 Commerce
Street, Dallas, TX 75242-0216 21 FEB 1986

TO: Commander, Little Rock District, ATTN: SWLCO-L

The proposed zoning change is approved subject to the following
comments:

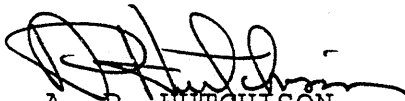
a. It appears that the structures proposed to be located on
Government land by the Arkansas Game and Fish Commission are over
and above what would be required to manage the proposed licensed
area. The Corps has historically disapproved such development.

b. It is questionable that the State of Arkansas, under
State law, is authorized to expend funds on improvements located
where they have no interest in the land.

c. In view of the above, the proposed license should be
reviewed and approved by SWDO prior to execution.

FOR THE COMMANDER:

2 Encls
wd all encls


A. P. HUTCHISON
Chief, Construction-
Operations Division

CF (w/basic & encls):
DAEN-CWO-R (5 cys)



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

SWLCO-L


30 January 1986

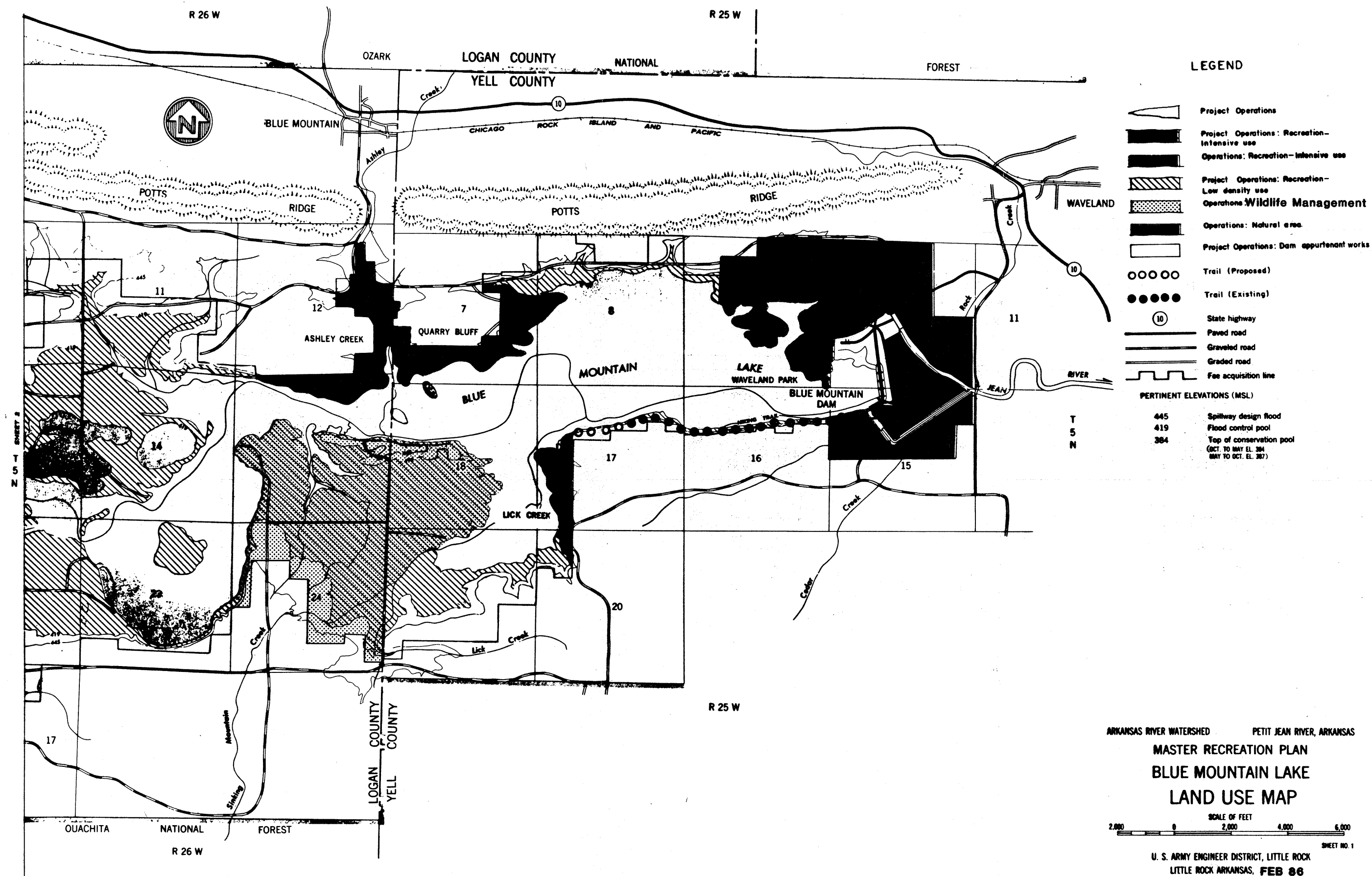
SUBJECT: Blue Mountain Lake, Updated Master Plan, Design Memorandum No. 1-C,
Supplement No. 2

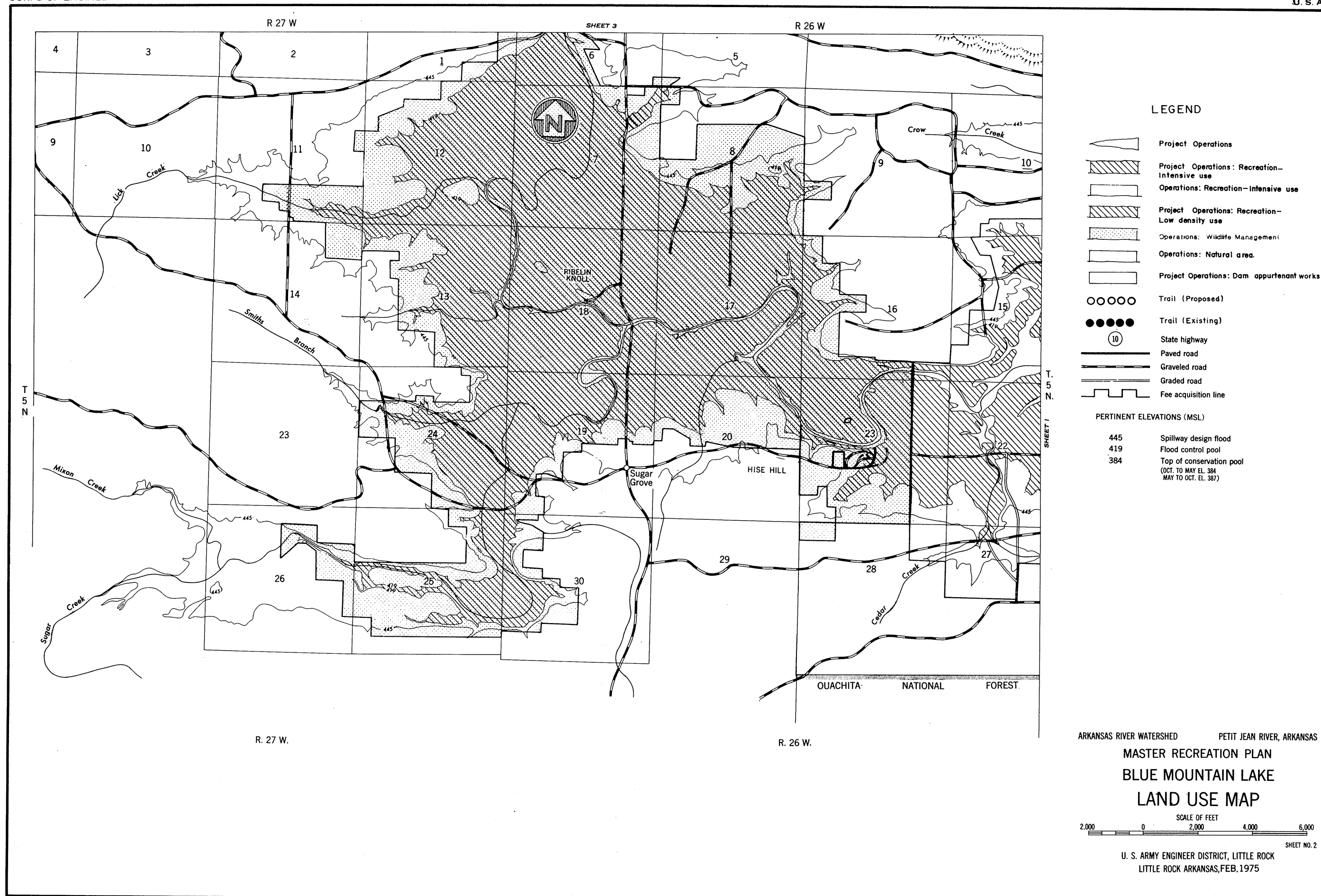
Commander, Southwestern Division
ATTN: SWDCO-R

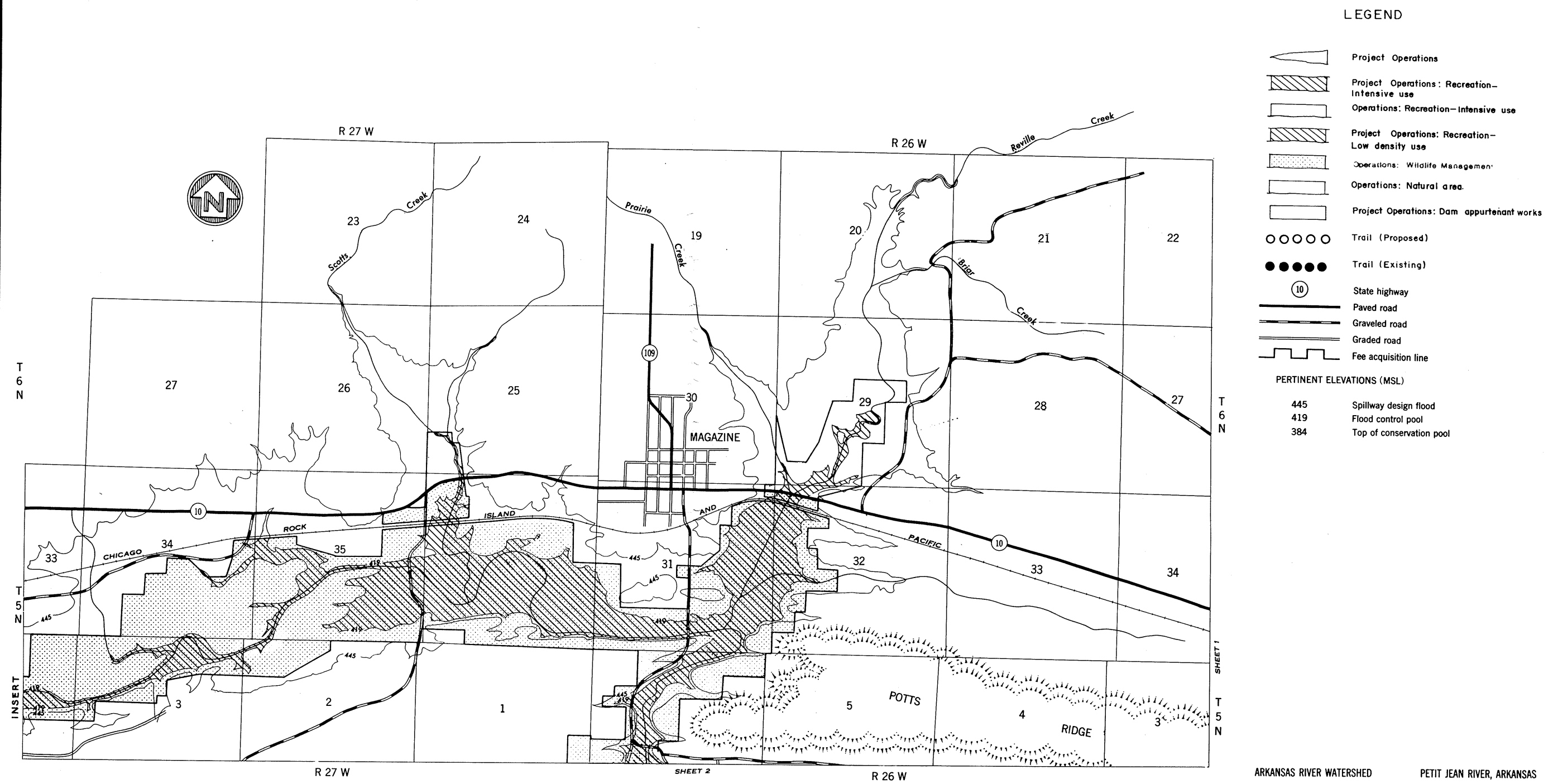
1. The purpose of this supplement is to reallocate approximately 8,143 acres of Project Operations: Recreation-Low Density land to an allocation of Operations: Wildlife Management. The Arkansas Game and Fish Commission has requested a license on the acreage be granted to them in accordance with the Fish and Wildlife Coordination Act of 1958 for intensive wildlife management purposes that will benefit both game and non-game species.
2. The Arkansas Game and Fish Commission plans to utilize the land for a wide range of sporting activities. A residence, public service building, equipment storage building, and associated support facilities, will be located above flood pool on Corps of Engineers land near Sugar Grove, Arkansas. These facilities will be used for a base of operations for the extensive wildlife management activities that will be performed on the licensed land.
3. Plates 4 and 5 have been revised to reflect the change in land use classification of the land that will be licensed to the Arkansas Game and Fish Commission.
4. Approval of this supplement is recommended.

2 Encls (9 cys)


ROBERT W. WHITEHEAD
Colonel, Corps of Engineers
Commanding







LEGEND

- Project Operations
- Project Operations: Recreation-Intensive use
- Operations: Recreation-Intensive use
- Project Operations: Recreation-Low density use
- Operations: Wildlife Management
- Operations: Natural area
- Project Operations: Dam appurtenant works
- Trail (Proposed)
- Trail (Existing)
- State highway
- Paved road
- Graveled road
- Graded road
- Fee acquisition line

PERTINENT ELEVATIONS (MSL)

445	Spillway design flood
419	Flood control pool
384	Top of conservation pool

ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS

MASTER RECREATION PLAN

BLUE MOUNTAIN LAKE

LAND USE MAP

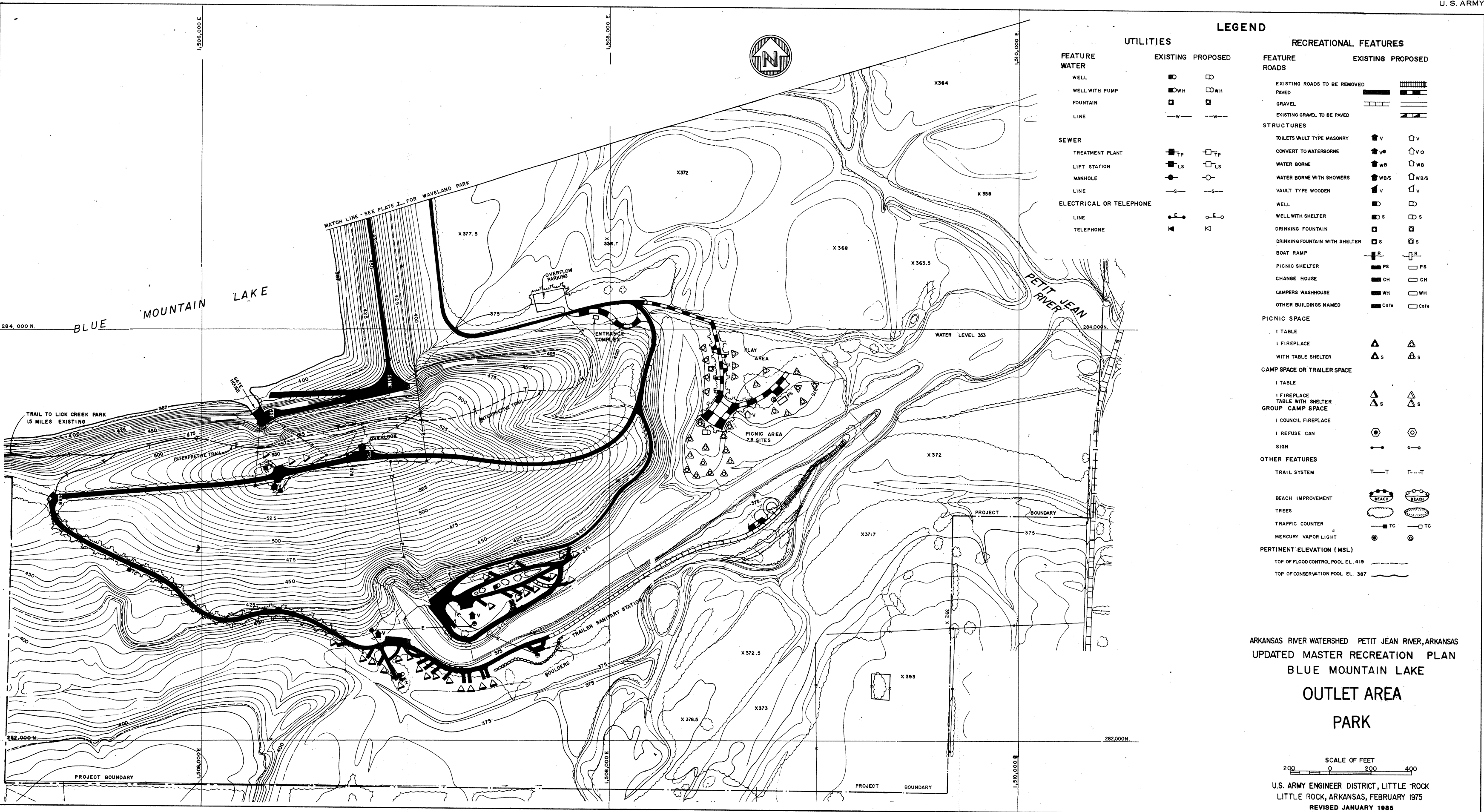
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2,000 0 2,000 4,000 6,000

SHEET NO. 3

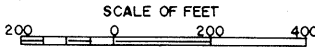
U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK

LITTLE ROCK ARKANSAS, FEB. 1975



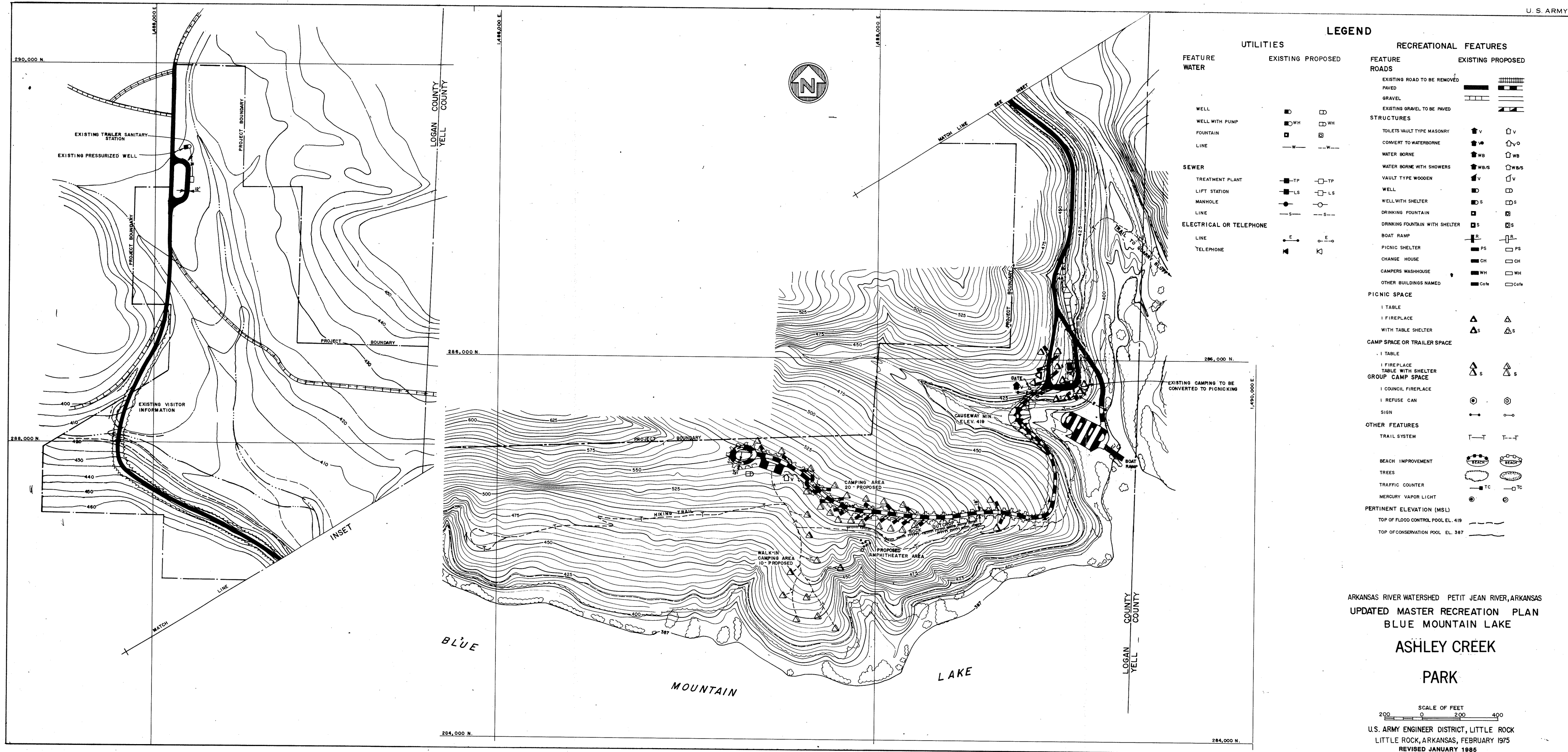
ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
BLUE MOUNTAIN LAKE

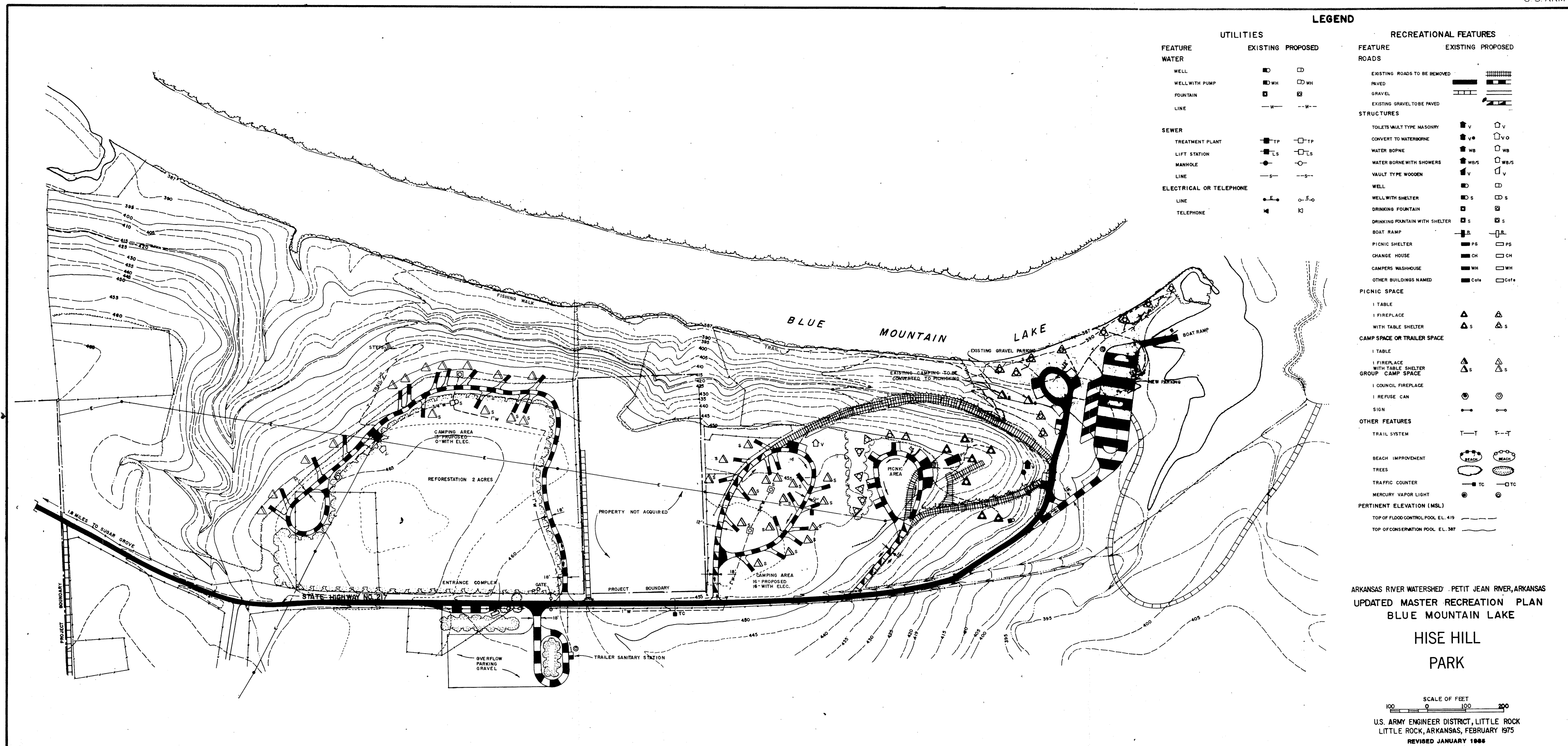
OUTLET AREA
PARK



U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1975
REVISED JANUARY 1985









SWDCO-R (SWLCO-L/21 Feb 85) 1st End

SUBJECT: Blue Mountain Lake, Updated Master Plan, Design Memorandum No. 1-C,
Supplement No. 1

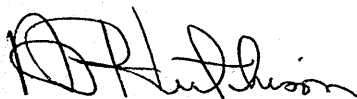
DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street, Dallas, TX
75242-0216 20 MARCH 1985

✓ TO: Commander, Little Rock District, ATTN: SWLCO-L

Approved.

FOR THE COMMANDER:

5 Encls
wd all encls


A. P. HUTCHISON
Chief, Construction-
Operations Division

CF:
DAEN-CWO-R (w/5 cys of encls)



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

SWLCO-L

21 February 1985

SUBJECT: Blue Mountain Lake, Updated Master Plan, Design Memorandum No. 1-C,
Supplement No. 1

Commander, Southwestern Division
ATTN: SWDCO-R

1. The purpose of this supplement is to update the park site plans to show existing recreational facilities and minor site plan revisions. The site plans were last revised in 1975 when the master plan was updated.
2. Approval of this supplement is recommended.

5 Encl (9 cys)
Plates 6-10

J. B. Whitehead, Maj, DDE
ROBERT W. WHITEHEAD
Colonel, Corps of Engineers
Commanding

SWDPL-R (SWLED-PV 2 Apr 75) 3d Ind

SUBJECT: Blue Mountain Lake, Petit Jean River, Arkansas, Design Memorandum
No. 1-C, Updated Master Plan for Development and Management of
Blue Mountain Lake

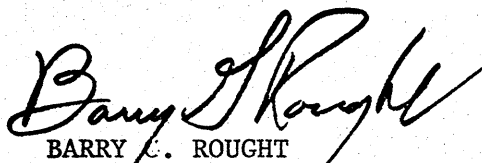
DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, TX 75202

TO: District Engineer, Little Rock

Subject master plan is approved subject to comments in the previous
indorsements.

FOR THE DIVISION ENGINEER:

1 Incl
nc


BARRY C. ROUGHT
Chief, Planning Division

CF:
HQDA (DAEN-CWO-R) (Dupe)

DAEN-CWO-R (SWLED-PV 2 Apr 75) 2nd Ind

SUBJECT: Transmittal of Master Plan for Blue Mountain Lake Petit, Jean River,
Arkansas

DA, Office of the Chief of Engineers, Washington, D.C. 20314 29 Dec 75

TO: Division Engineer, Southwestern

ATTN: SWDPL-R

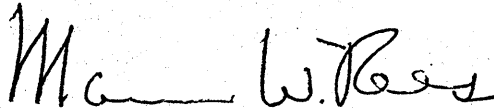
Subject Master Plan for Blue Mountain Lake is approved subject to Division comments and the following:

a. Paragraph 3-10b, Page 3-9 Letter agreements with the Game and Fish Commission to establish food plots is apparently independent of any other outgrant. A review of Plates 3, 4 and 5 does not indicate a fish and wildlife management land use allocation.

b. Paragraph 3-14, Page 3-11 clarification of Colonel William Brooks' action is needed. It appears that he served on both sides.

c. Table 4-8, Page 4-9 needs clarification since "acres-Boating" for 1980 is shown to be less than that required for 1975.

FOR THE CHIEF OF ENGINEERS:



MARVIN W. REES
Colonel, Corps of Engineers
Executive Director of Civil Works

1 Incl
1 wd
2 nc

SWDELR (SWLEP-PV 2 Apr 75) 1st Ind
SUBJECT: Blue Mountain Lake, Petit Jean River, Arkansas. Design
Memorandum No. 1-C, Updated Master Plan for Development
and Management of Blue Mountain Lake

DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, Texas 75202 31 JUL 1975

TO: HQDA (DAEN-CWP-V)
WASH DC 20314

1. Forwarded recommending approval of the land use portion of the subject master plan.
2. Those portions of the plan pertaining to development and management of the project resources are approved subject to the inclosed comments which should be considered and incorporated in the plan, as appropriate, prior to implementing the development or action involved.
3. This indorsement was delayed in order to process several initial master plans received concurrently which required higher priority action to meet construction schedules.

FOR THE DIVISION ENGINEER:

15/
BARRY G. ROUGHT
Chief, Planning Division

2 Incl
4 cy incl 1 wd
Added 1 Incl
2. Comments

CF:

SWDCO w/cy incl
SWDRE w/cy incl
SWDED-A w/cy incl
SWDPD w/cy incl 2

**Comments on Master Plan for Blue Mountain Lake, Petit Jean River,
Arkansas, DM No. 1-C, Incl 2 to SUDPL-R 1st Ind**

1. Section II. The pool elevations at various flooding frequencies up to the top of flood control pool would be helpful in evaluating the degree of flooding of the various facilities. This frequency information should be provided in future Master Plan DM's.
2. Para 3-03. The soils information should be expanded to give the management characteristics of each soils association, either by narrative or table.
3. Para 3-05. The second sub-paragraph states that the improvement of the lake water quality is due to the CO₂ that is released from decaying vegetation. The chemical interaction which causes the reduction of turbidity in the lake should be more clearly explained. CO₂ does not coagulate the clay particles directly.
4. Para 3-07.
 - a. The term "malaria - bearing mosquitoes" is misleading. These should be referred to as Mosquito vectors and a discussion added pointing out that malaria has been essentially eradicated from the United States and is no longer a significant problem. Also, a discussion of the possibility of outbreaks of mosquito-borne encephalitis would be appropriate in this paragraph.
 - b. It is recommended that the discussion be expanded to advise that all chemicals will be used in accordance with their registered use and label instructions.
5. Para 3-07b. Consideration should be given to the use of small aerators (compressed air units) at the vault toilets. These units have been used successfully at other Corps installations to eliminate odors around the restroom areas and produce a fresher sewage which would be more amenable to treatment at the City of Ola facility. The aerators would operate intermittently by automatic timers and require minimal electrical energy consumption.
6. Para 7-01. Acreages should be given for all the land-use associations, preferable in tabular form.
7. Para 7-01d. The natural areas should be described.
8. Para 14-02. The fish species found in Blue Mountain Lake should be checked and necessary corrections and additions be made to the listing. It is believed that Kentucky or Spotted Bass, white crappie, channel catfish and possibly others should be added.

9. Para 14-03. There is no mention of rabbits, mourning dove, squirrels, deer and other species that possibly inhabit the area. Also, no mention is made of water fowl use of the lake. This paragraph should be expanded accordingly.

10. Plate 9. Consideration should be given to providing angular parking for the one-way loop roads for ease in parking.

11. General.

a. The DM should be supplemented to indicate design criteria to be used for proposed facilities.

b. If appropriate, a vegetative cover and wildlife habitat type map should be added to the plates.

c. Courtesy docks should be planned for all existing and future boat launching areas.



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203

REPLY TO
ATTENTION OF:

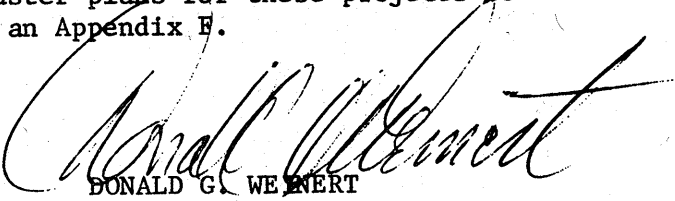
SWLCO-L

29 May 1975

SUBJECT: Private Floating Facilities, Blue Mountain, Clearwater,
Nimrod and Ozark Lakes

Division Engineer, Southwestern
ATTN: SWDCO-R

1. There were no private floating facilities on Blue Mountain, Clearwater, Nimrod and Ozark Lakes as of 13 December 1974, the effective date of ER 1130-2-406. In accordance with the policy of the Chief of Engineers, no private floating facilities will be permitted on these lakes.
2. Upon approval of this action, copies of this correspondence will be made a part of the master plans for these projects to satisfy the requirements for an Appendix F.


DONALD G. WEHNERT
Colonel, Corps of Engineers
District Engineer


SWDCO-R (SWLCO-L 29 May 75) 1st Ind
SUBJECT: Private Floating Facilities, Blue Mountain, Clearwater,
Nimrod and Ozark Lakes

DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, TX 75202 10 JUN 1975

TO: District Engineer, Little Rock, ATTN: SWLCO-L

Approved.

FOR THE DIVISION ENGINEER:


GEORGE W. STAPLES
Chief, Construction-
Operations Division



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203

REPLY TO
ATTENTION OF

SWLED-PV

2 April 1975

SUBJECT: Blue Mountain Lake, Petit Jean River, Arkansas, Design
Memorandum No. 1-C, Updated Master Plan for Development
and Management of Blue Mountain Lake

Division Engineer, Southwestern

Design Memorandum No. 1-C, which was prepared by an architectural-
engineering firm under Contract No. DACW03-73-C-0098, is submitted
for your approval.

1 Incl (7 cys)
as

A handwritten signature in cursive script, reading "Donald G. Weinert", is written over the typed name and title.

DONALD G. WEINERT
Colonel, Corps of Engineers
District Engineer

UPDATED MASTER PLAN FOR
DEVELOPMENT AND MANAGEMENT OF
BLUE MOUNTAIN LAKE

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BLUE MOUNTAIN LAKE

PREVIOUSLY ISSUED AND CURRENTLY SCHEDULED DESIGN MEMORANDUMS

<u>Memo No.</u>	<u>Subject</u>	<u>Submitted or scheduled</u>	<u>Date approved</u>
-	Master Recreation Plan for Blue Mountain Reservoir	24 Apr 47	9 Jul 47
1-B	Updated Master Plan for Reservoir Development and Management	7 Dec 64	25 Jul 66
-	Supplement No. 1 to the Updated Master Plan for Reservoir Development and Management	31 Jan 68	18 Sep 68
1-C	Updated Master Plan for Development and Management of Blue Mountain Lake	Feb 75	

BLUE MOUNTAIN

APPENDIXES

<u>No.</u>	<u>Subject</u>	<u>Submitted or scheduled</u>	<u>Date approved</u>
A	Project Resource Management	Dec 72	Apr 74
B	Forest Management Plan	Aug 72	Sep 73
C	Fire Protection Plan	Sep 74	
D	Fish & Wildlife Management Plan	Jun 75	
E	Project Safety Plan	Oct 72	Mar 73

BLUE MOUNTAIN LAKE
PETIT JEAN RIVER
ARKANSAS

UPDATED MASTER PLAN FOR
DEVELOPMENT AND MANAGEMENT OF
BLUE MOUNTAIN LAKE

SECTION I

INTRODUCTION

1-01. Project authorization. The Blue Mountain Dam and Reservoir Project was authorized by the Flood Control Act approved 28 June 1938 (Public Law No. 761, 75th Congress, 3rd Session). The primary purpose of this project is flood control.

1-02. Purpose and scope of the report. This report updates Design Memorandum No. 1-B, Updated Master Plan for Reservoir Development and Management for Blue Mountain Lake approved 25 July 1966. This updated plan provides for an orderly, progressive development of the project, and changes the planning and land use resulting from a re-evaluation after approximately eight years of development under the guidance and direction of Design Memorandum No. 1-B.

1-03. Application of public laws and policy.

a. General. Section 4 of the Flood Control Act approved 22 December 1944, as amended by Section 4 of the Flood Control Act 1946, and as further amended by Section 209 of the Flood Control Act approved 3 September 1954 (Public Law 780, 83rd Congress), and as amended by Section 207 of the Flood Control Act of 1962, approved 23 October 1962, as amended by Section 2 of the Land and Water Conservation Fund Act of 1965, and as further amended by Section 210 of the Rivers and Harbors Flood Control Act of 1968, authorizes the Department of the Army to provide for recreational use of the lakes under its control.

b. Implementation of Department of Army Policy developed subsequent to Public Law 89-72. Recreational development after FY 74 requires implementation of the policy established by the Secretary of the Army in coordination with the Office of Management and Budget as outlined in EC 1130-2-138 dated 31 May 1974, Recreational Development at Completed Projects. The policy requires that a non-Federal body must agree to furnish not less than 50 percent of the cost of incremental development and further agree to operate, maintain, and provide replacement of the park development, or that a system of user charges be established to recover all operation and maintenance costs.

1-04. Status of the project. Construction of the dam and appurtenant works was initiated in June, 1941, but was suspended in November, 1942, by order of the War Production Board. Construction was resumed in April, 1946, and the dam was completed in June, 1947. The Master Plan for recreational development and reservoir management was prepared in April, 1947, and updated in July, 1966. Through 1974, after 27 years of operation since March 1947, the lake has regulated 175 floods in the Petit Jean River. Crest stages at Danville, 26 miles downstream, were reduced an average of 3.8 feet, and flooding was prevented on an average of 1,344 acres of improved land for each flood. The accumulated flood losses prevented are estimated at \$7,173,000.

SECTION II

PROJECT DESCRIPTION

2-01. Location. Blue Mountain Dam is located on the Petit Jean River in Yell County, Arkansas, about one and one-half miles southwest of the village of Waveland, Arkansas, and about four miles southeast of the town of Blue Mountain, Arkansas, from whence it derives its name. It is about 55 miles by road southeast of Fort Smith, Arkansas, and about 75 river miles above the confluence of the Petit Jean and Arkansas Rivers. The project area is located in the Ouachita Mountains of west central Arkansas in a rather rugged, wooded area between the ridges and foothills of Mount Magazine on the north and those of Petit Jean Mountain on the south. The lake area is located in Yell and Logan Counties, Arkansas, with the dam being about three and one-half miles downstream from the boundary line between the two counties. About 77 percent of the lake area is in Logan County with the remaining 23 percent, including the spillway, embankment, and outlet works, in Yell County.

2-02. Accessibility. The area is served principally by Arkansas State Highway 10, a hard-surface highway that runs east and west along the northern side of the lake. The region is served from the north and south principally by U. S. Highway 71, a hard-surface highway which generally parallels the western boundary of Arkansas, and by State Highways 7 and 27. Access to the lake from U. S. Highway 71, is provided by State Highways 10 and 23. State Highway 27 crosses Highway 10 at Danville, about 20 miles east of the dam, and continues south to cross U. S. Highway 270 at Mt. Ida. Supplementing these main arteries is a network of county and community roads. The Chicago, Rock Island and Pacific Railroad extends in an east-west direction between the lake and Arkansas Highway 10 on the north side of the lake, and furnishes freight service only. A landing strip for airplanes is located about four miles east of the City of Booneville and approximately 15 miles west of Blue Mountain Dam. The strip has a bituminous surface and is 3,200 feet long. There is a small "T" hanger but no hard-surface parking area for planes. Locations of access routes are shown on Plate 2.

2-03. Description of the project area. A total of 17,018 acres were purchased in fee simple for the project. The area is divided into the following segments:

- a. There are 3,350 acres below elevation 387, highest conservation pool elevation, which are subject to almost constant flooding.

b. Between elevation 387 and elevation 419, top of flood control pool, there are 7,700 acres subject to occasional flooding.

c. There are 5,968 acres above elevation 419, top of flood control pool. In this area there are 4,668 acres subject to infrequent flooding. The lands above the flood control pool form an irregular shaped area varying in width from a few feet to about one-quarter mile.

2-04. Engineering features. The dam, which is a rolled-fill earth embankment extending across the valley floor between two abutments, has a crest length of approximately 2,800 feet, a maximum height of 115 feet above the streambed, and a maximum base width of approximately 830 feet. The outlet works for releasing impounded waters from the lake consists of a tunnel through the right abutment with an intake structure and control tower at its inlet end, and a stilling basin and a discharge channel at its outlet end. The discharge tunnel enters the Petit Jean River a short distance below the dam. The tunnel, which is circular in section except for the upper and lower transition sections, has an inside diameter of 20 feet and is 1,032 feet long, including the transitions. The spillway is located in a low natural saddle about 1,200 feet downstream from the left abutment of the dam. A bridge exists over the spillway to provide access to the dam and outlet works from the north when water is flowing in the spillway channel. The spillway discharge enters the present river channel about 2,000 feet below the dam axis. The project is operated so that 233,000 acre-feet of storage capacity, between elevations 419 and 384, are reserved for flood control, and 25,000 acre-feet of storage below elevation 384 are maintained at all times to provide a conservation pool. The top of the flood-control pool, elevation 419, and the top of the conservation pool, elevation 387, are the controlling elevations with respect to the recreational development of Blue Mountain Lake. The engineering features of the dam and the lake are shown in Table 2-1.

TABLE 2-1

PERTINENT ENGINEERING DATA

Dam:

Crest length, feet	2,800
Height of dam above streambed, feet	115
Volume of earth in dam, cubic yards	1,600,000
Elevation, top of dam (roadway) above m.s.l.	452

Spillway:

Length of spillway, feet	150
Length of outlet tunnel, feet	1,032

Lake:

Top of flood-control pool, elevation	419
Surface area, acres	11,000
Storage capacity of lake, acre-feet	258,000
Length of shoreline, miles	89
Top of conservation pool, elevation	October-April 384
	April - October 387
Surface area, acres	2,910
Storage capacity of lake, acre-feet	25,000
Length of shoreline, miles	50

2-05. Stage hydrographs. The top of the flood-control pool is elevation 419. Between March 1947, and April 1968, the low water rule curve-mosquito control operation called for the top of the conservation pool to be at elevation 385.5 on 15 March. This elevation was maintained until about 15 May when it was slowly lowered to 382 by 15 October. It was then raised to elevation 384 and maintained there until March of the following year. After April, 1968, the low water rule curve operation was changed such that the conservation pool level is raised to elevation 387 by 1 May and maintained at that elevation until 15 May. The lake is then slowly lowered to elevation 384, where it remains until 15 April of the following year. At that time, it is again raised to elevation 387 as the cycle was repeated.

Lake elevations depend on inflow and channel capacity available for flood-control releases. The maximum pool level experienced was elevation 422.54 on 26-27 May, 1957. The minimum pool level experienced was elevation 370.68 in October, 1959. This was the result of a drawdown for fish management.

The stage hydrographs for the period January, 1947, through December, 1974, are shown on Plates 1 thru 1B. Since impoundment of water began at Blue Mountain Lake, the average annual pool fluctuation has been 22.1 feet. The maximum experienced fluctuation of 51.5 feet occurred in 1957.

2-06. Clearing. All timber growth was removed from land lying below elevation 390, which is six feet above the original top of the conservation pool.

2-07. Expenditures for recreational development. About \$83,000 was spent for initial development of recreational facilities around the lake and about \$269,000 of Code 710 funds have been allocated through FY 1974 for recreational facilities since completion of initial development.

2-08. Private developments. There are 47 vacation resorts, cottages, camps, lodges, hotels and similar accommodations around the lake which are located on private property adjoining the Government ownership. There are 13 restaurants, cafes and public dining rooms in the vicinity. There is one boat dock on Blue Mountain Lake located in the Ashley Creek Park and it has a total valuation of \$10,000. The assessed valuation of all taxable property in Yell and Logan Counties was \$32,821,065 in 1973 as compared to \$10,102,565 in 1949, two years after completion of the dam.

SECTION III

RECREATION AND ENVIRONMENTAL RESOURCES OF THE PROJECT AREA

3-01. General. The region in which Blue Mountain Lake is located affords an excellent opportunity for outdoor recreational activities, and the addition of the Blue Mountain project to the region has enhanced the recreational possibilities. The region enjoys a mild climate. The many visitors to the lake participate in picnicking, camping, fishing, boating, swimming, hunting and sightseeing activities.

Despite improvements to recreational facilities at the park, visitation has declined in the last ten-year period. In 1963, over 431,900 people visited the Blue Mountain project. During 1970 the project was visited by 411,732 people. The 1973 visitation was only 265,034 which was probably due to high water and unfavorable weather conditions during the recreation season.

3-02. Lake and surrounding area. At the top of the conservation pool, the lake has a shoreline of 50 miles and a surface area of 3,350 acres. At the top of the flood-control pool, the lake has a shoreline of 89 miles, a surface area of 11,000 acres, and a storage of 233,000 acre-feet. The shoreline contains numerous small coves and inlets at all stages of the water level.

3-03. Soils. (See page 3-3 for a general soil map).

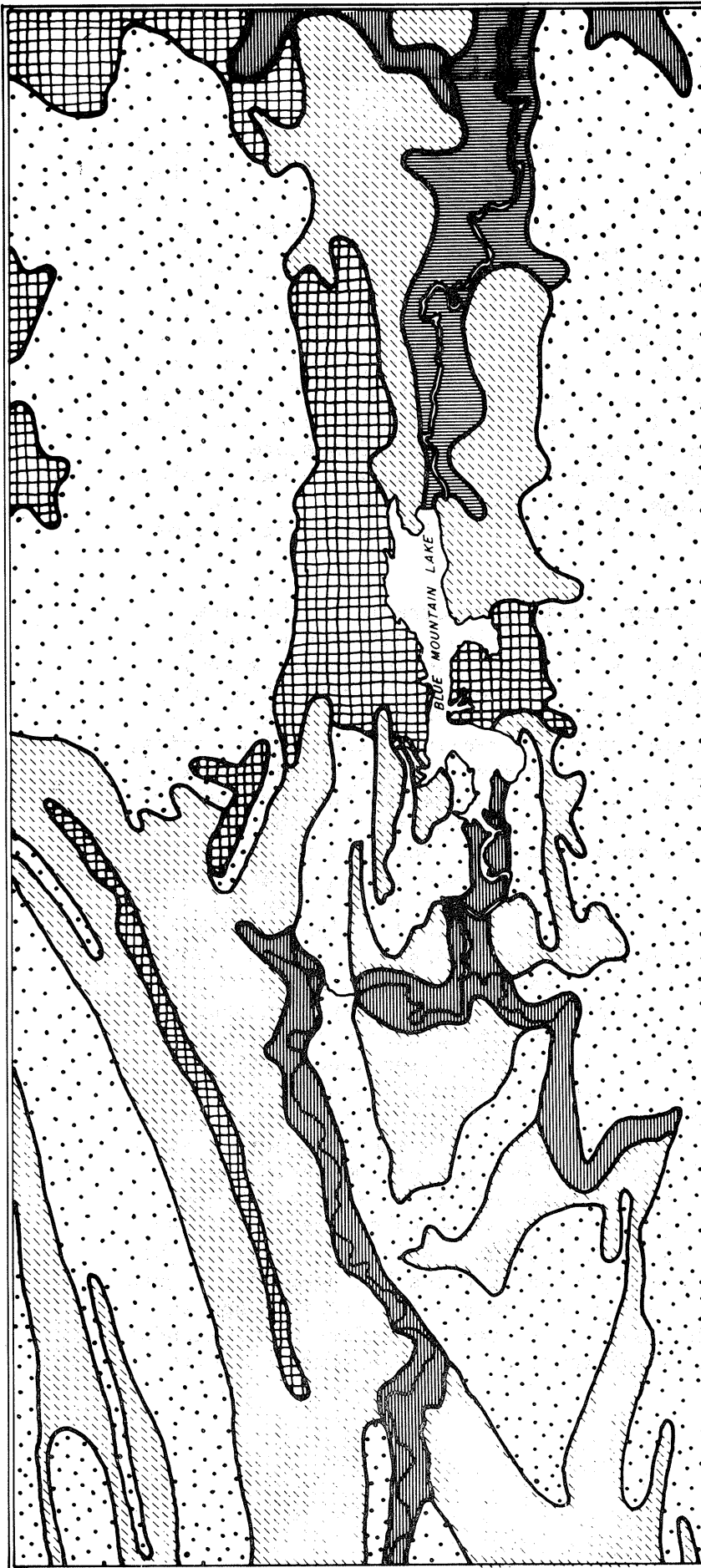
a. Linker-Mountainburg. The soils of the lake area are primarily of the Linker-Mountainburg Association. They are shallow to moderately deep, well drained, moderately to rapidly permeable, acid and loamy. They occur on level to moderately sloping hill-sides and ridges. Portions of this association are gravelly or stony. The proportions are Linker 45%, Mountainburg 35%, and a combination of Allen, Cane, Enders, and Montevello 20%. Linker soils vary from 20 to 50 inches in thickness lying over sandstone bedrock. They have grayish-brown or brown sandy loam surface soil over yellowish red or red sandy clay loam subsoil. Mountainburg soils are less than 20 inches thick over sandstone bedrock. They have brown or grayish-brown sandy loam surface soil over yellowish-red or reddish-brown sandy loam subsoil. This association is found principally along the north shore of the lake, and about midway along the south shore.

b. Leadvale-Taft. Extending from the dam about two miles along the south shore of the lake and about two miles southward

this association is deep, moderately well to poorly drained, moderately slowly permeable, acid and loamy in the level to gently sloping valleys. Leadvale 65%, Taft 20%, and a combination of Cane and Guthrie 15%. The moderately well drained Leadvale soils are grayish-brown or brown silt loam surface soil over yellowish-brown silty clay loam upper subsoil. Beginning at a depth of 18 to 26 inches, the subsoil is a brown and gray, mottled, compact and brittle silty clay loam fragipan. The somewhat poorly drained Taft soils have grayish-brown silt loam surface soil and grayish-brown, mottled silt loam upper subsoil. Beginning at a depth of 20 to 36 inches, the subsoil is a grayish-brown and gray, mottled, compact and brittle silty clay loam fragipan. This association is also found along a short length of the north shore west of Ashley Creek Park.

c. Enders-Mountainburg. This association is found on minor lengths of both north and south shores in the upstream end of the lake. The soils are deep to shallow, well drained, very slowly to rapidly permeable, acid, gravelly or stony, and loamy on steep mountain sides and moderately sloping hilltops and ridges. Enders 40%, Mountainburg 30%, and a combination of Allen, Cane, Linker, Leadvale, Montevallo, and Rockland 30%. Enders soils have grayish-brown fine sandy loam surface soil over yellowish-red or red clay subsoil that is mottled gray in the lower part. Mountainburg soils are less than 20 inches thick over sandstone bedrock. They have brown or grayish-brown sandy loam surface soil over yellowish-red or reddish-brown sandy loam subsoil.

d. Sequatchie-Pickwick. This association is found only along a short length of shoreline at the extreme upstream end of the lake, and the river portion upstream from Hise Hill Park. The soils are deep, well drained, moderately permeable, acid, loamy on flood plains and terraces of local streams. Sequatchie 45%, Pickwick 35%, and inclusions of Cane, Guthrie, Leadvale and Taft 20%. Sequatchie soils have dark brown sandy loam surface soil over brown to yellowish-red loam subsoil. Pickwick soils have brown silt loam surface soil over yellowish-red or red silty clay loam subsoil.



- ENDERS - MOUNTAINBURG
- LEADVALE - TAFT
- LINKER - MOUNTAINBURG
- SEQUATCHIE - PICKWICK
- TAFT - CLEORA

ARKANSAS RIVER WATERSHED PETIT JEAN RIVER ARKANSAS
 UPDATED MASTER RECREATION PLAN
 BLUE MOUNTAIN LAKE
 GENERAL SOIL MAP
 SCALE OF MILES 0 1 2 3 4 5
 U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
 LITTLE ROCK, ARKANSAS, FEBRUARY 1975

3-04. Physiography. Blue Mountain Lake is situated in the southern portion of the Arkansas Valley Province on the east-west flowing Petit Jean River. The lake is near the center of the large east-west trending Ranger Anticline with strata dipping steeply both to the north and south, complicated by several ancient thrust faults generally moving north. The bedrock beneath the lake is composed of alternating thin shales (forming the valleys) and sandstones (forming the ridges) of the Atoka Formation of Early Pennsylvanian Age. Younger, moderately inclined, thin sandstones form the ridge and valley topography on the flanks of the anticline adjacent to the lake, while the gently dipping younger Pennsylvanian Hartshorne Sandstone, McAlester Shale, Savanna Sandstone form the Poteau Mountain, East Poteau Mountain, and White Oak Mountain to the southwest, and Magazine Mountain to the north. Some dickite and quartz crystals occur along joint and fault systems in the lake area.

3-05. Water characteristics. Tributary streams to the Blue Mountain Lake are generally short and less than five miles in length. The drainage area is approximately 488 square miles. The water shed drains shale and sandstone soils picking up clay from the flat bottom-lands of the main stream. The lake has a relatively shallow average depth and receives strong wind action, the resultant condition being water that is cloudy and visually unappealing. Blue Mountain Lake has no substantial chemical or bacteriological pollution problems and therefore, is of good water quality. There are some potential localized problems near municipalities that require a continual monitoring program which will be conducted by Corps of Engineers personnel three times a year. Blue Mountain Lake is extremely turbid. Light penetration of less than 12" as measured with Secchi discs is common. Penetrations of only two to three inches have been measured on several occasions. The cause of turbidity is suspended collodial clays contained in the lake inflow. Most of the suspended clay passes through the lake with the releases; but, the remaining load remains in suspension and therefore, creates year-around turbidity. There is no frequency associated with the turbidity since it is present at all times; however, the turbidity levels increase during and immediately following flood runoff because of the increased turbidity of the floodwaters. In an effort to improve the water quality and fish spawning in Blue Mountain Lake three drawdowns have been carried out; 1956-57, 1957-58 and 1959-60. All of the drawdowns resulted in some degree of success but none of the work was considered effective enough to produce a lasting change in the water quality of the lake. Noticeable benefits only extended over about 2 years. In a continuation of these efforts a more

intensive and drastic form of drawdown was initiated in June, 1965. The lake was dewatered to expose 1,500 to 2,000 acres of lake bed. This area was seeded by airplane with approximately 10 tons of a mixture of Tracy sorghum, sweet sudan grass, Sorghum sorghum var; and a sorghum-sudan grass hybrid. Four months later, almost the entire exposed lake bed was a dense growth of sorghum-type plants six to eight feet tall.

After refilling in the winter of 1965-66, the lake remained relatively clear (visibility 14 to 18 inches) except during high water. This improvement of the lake water quality was due to the CO₂ that was released from the decaying vegetation which caused a coagulation of the clay particles and allowed them to settle. The lake remained in this condition for about four years and then returned to its natural turbid condition. Surveys conducted by the Arkansas Department of Pollution Control and Ecology revealed no serious sources of water pollution, although potential sources do exist. These sources are municipal sewage treatment plants, built-up areas without sewage treatment, and run-off from agricultural areas. For additional details, see the reply letter of coordination from the Arkansas Department of Pollution Control and Ecology in Section V of this master plan.

3-06. Scenic quality. Blue Mountain Lake lies in the sharply defined valley of the Petit Jean River, a tributary of the Arkansas River. Adjacent to the lake on the north, and extending the full length of the lake, is the abrupt, steeply rising Potts Ridge. Its crest is about 450 feet above the lake, and the ridge is bisected by south-flowing Ashley Creek which flows into Blue Mountain Lake. The timbered ridge forms a pleasing barrier between the lake and the Rock Island Railroad and Arkansas Highway 10. About four miles north of Blue Mountain Dam is Magazine Mountain rising to an elevation of 2,753 feet, m.s.l., the highest elevation in Arkansas. From the summit of Magazine Mountain the expanse of Blue Mountain Lake is very prominent. A segment of the Ozark National Forest begins approximately two miles north of the lake.

On the south, a series of rugged mountains border the lake. These are Dry Creek Mountain, Flood Mountain and Potato Hill. These mountain crests rise to an elevation of from 2,000 feet to 2,400 feet, and are heavily forested. Habitation is sparse because the area is included in the Ouachita National Forest. Tributary creeks having headwaters in these mountains include Sugar Creek, Dry Creek, Cedar Creek, and Lick Creek.

Along the creeks and on the mountain slopes there is a variety of trees, including shortleaf pine, upland oak, gums, hickory, ash, elm and cottonwood. These blend with evergreens to provide a dramatic

display of fall color. A survey of visitors shows that nearly 58 percent of the annual visitors were sightseers, considerably more than fishing and swimming activities combined. The Blue Mountain Lake area gives the visitor a wilderness-like experience.

3-07. Health conditions. In general, health conditions in the area are good. Some malaria-bearing mosquitoes are found in the area, but occasional spraying around shallow coves, annual fluctuation of the water level (see Paragraph 2-05) and other preventive measures are conducted to prevent mosquito breeding in and around the lake.

a. Disposal of solid waste. Visitation to Blue Mountain Lake has increased steadily for the past several years. The volume of solid waste to be disposed of continues to increase at a greater rate than the increase in visitation. The use of disposable bottles and containers has increased the volume per person sharply during the past two or three years. The solid waste generated by visitors is disposed of daily during the summer months and less frequently during the winter season. In 1973 an estimated 175,000 pounds of solid waste were disposed of on Blue Mountain. Executive Order 11507 as implemented by the Corps provides that the use of existing state approved disposal systems is the preferred method of disposing of solid waste. If no other means of disposal is available, a land-fill operated in accordance with State regulations can be established on Government-owned land. All solid waste from the parks is taken to sanitary landfills on Government land, operated by the Corps of Engineers in compliance with State guidelines. The adverse effects of the disposal of solid waste include the clearing of areas of land for landfill, the possible contamination of ground water and the unknown effects of long-term burial of solid waste on the environment. Continued monitoring of the sanitary landfill is conducted by Corps of Engineers personnel. Although there are more than 12 public roadways on Blue Mountain leading to the shores of the lakes, dumping on Government-owned land is not a major problem. In the landfills at Blue Mountain, a trench is cut in the earth and the solid wastes are placed in the trench. The solid wastes are then spread in thin layers, compacted, and covered with earth excavated from the trench. The trench method is used because it is best suited for flat or gently sloping land where the water table is not near the ground surface. The main advantage to using this method is that normally the material excavated from the trench can be used for cover with a minimum of hauling. The waste collection compactor deposits its load into the trench where the bulldozer is used to spread and compact it at the end of the day. The dozer is then used to excavate soil from the future trench which is used

as the daily cover material. Settlement occurs at a rapid rate in the early stages and gradually tapers off as time passes. In most cases the fill will never stabilize to the extent where facilities can be built without danger of foundation failure. The filled areas will be vegetated and returned to their natural state.

b. Disposal of sewage. The parks surrounding Blue Mountain Lake are provided with vault-type toilets. The vault toilets are pumped during the summer by contractors on a schedule varying from once a month to every other month in some areas, and less frequently during the winter. Beginning December 1973, the contents pumped from vault-type toilets are discharged into the Ola, Arkansas, sewage treatment facilities which are State approved and provide secondary treatment. A lagoon on Government land was used for disposal before the Ola sewage plant was utilized. This lagoon is no longer used and is being returned to its natural state. There are no known instances of pollution of the lake as a result of disposing of sewage from vault-type toilets.

3-08. Climate. Blue Mountain Lake is located in a humid region in which precipitation is rather evenly distributed throughout the year. The average annual precipitation is about 46 inches with the greatest monthly rainfall occurring in May. Snowfall is moderate, averaging five to six inches annually, and remains on the ground for only short periods. The average annual temperature in the vicinity of the lake is approximately 62 degrees Fahrenheit. The maximum and minimum temperatures recorded at the United States Weather Bureau Station at Booneville, Arkansas, were 113 degrees and 18 degrees below zero Fahrenheit, respectively. The average frost-free period is about 220 days. The average date of the last killing frost occurring in the spring is 30 March, and the average date of the first killing frost occurring in the fall is 1 November.

3-09. Vegetation. The Blue Mountain Lake area primarily contains two of Arkansas' three basic forest types, Loblolly-Shortleaf Pine-Hardwood and Upland Hardwoods. Although the Bottomland Hardwood association could not be considered a major forest classification within the area, many of its species do grow and thrive within the river bottom lands. One of the major reasons why this area contains such a broad species composition is its physiographic variations from river valleys to steep, rocky slopes. Much of the original vegetative character has been altered due to heavy clearing, cutting and numerous fires. Agricultural development has claimed much of the forest within the river valley. Sweetgum (*Liquidambar styraciflua*) and Shortleaf Pine (*Pinus echinata*) exist in many areas. These trees are pioneer species and serve as good indicators of land which has been cleared or burned over and is undergoing a natural reforestation cycle.

Large quantities of Shortleaf Pine (*Pinus echinata*) are found on the dry, rocky slopes and ridges with southern exposures. Some of the vegetative species which are common to the area are: Post Oak (*Quercus stellata*); Red Oak (*Quercus rubra*); Black Oak (*Quercus veluntina*); Ash (*Fraxinus* Sp.); Hickory (*Carya* Sp.); Elm (*Ulmus* Sp.); Cottonwood (*Populus deltoides*); Sweetgum (*Liquidambar styraciflua*); River Birch (*Betula nigra*); Black Willow (*Salix nigra*); Dogwood (*Cornus florida*); Redbud (*Cercis canadensis*); and Plum (*Prunus* Sp.). This list gives an indication of the wide variety of vegetation which exists within the area. An indepth analysis and inventory can be found in the Forest Management Plan for Blue Mountain Lake, Appendix B.

3-10. Fish and wildlife. Fish and wildlife activities on Blue Mountain Lake are carried out under the auspices of the Arkansas Game and Fish Commission. The Commission has been particularly active in its efforts to promote fishing.

a. Fishing. Desirable fishing conditions on the 3,350-acre lake have been difficult to maintain. The lake is relatively shallow (at conservation pool level, more than 75 percent of the lake is less than ten feet deep), receives strong wind action, and has been plagued with heavy concentrations of colloidal turbidity and fish populations dominated by non-formidable sizes of buffalo, carp, drum and gizzard shad. The lake has been lowered five times for fish management purposes.

The latest intensive program occurred during the latter half of 1965. The lake was drawn down more than ten feet to permit seeding the exposed bottom. During the fall, the lake was lowered an additional two feet and over 95 percent, by weight, of the total poundage of fish present were killed. This was followed by restocking the lake. By the following summer, the lake had returned to the normal conservation pool level and fishing was reported to be excellent.

A multi-purpose program of water-land management was devised in 1968. This program came into being as a solution to the shallow water areas which were a menace and a hazard to small boats. The plan increased the water surface elevation to 387 m.s.l. (an increase of 3 feet) by at least 1 May each year. This enhanced fishery benefits by increasing natural reproduction of fish and improving survival and growth rate of young-of-the year fish. An in-depth description can be found in the Fish and Wildlife appendix.

By 1970, indications of turbidity returning to the lake were present. The lake was drawn down in the winter of 1970-71 and opened to commercial fishing in an attempt to prevent the deterioration of the fish population. Results of this drawdown were reduction of water turbidity, increased spawns of channel catfish, largemouth bass and white bass, and a good crappie spawn.

In an attempt to prevent the deterioration of the fish population and the rapid return of excessive water turbidity the Arkansas Game and Fish Commission recommended that Blue Mountain Lake be drawn down on a regular basis every third fall and winter, unless altered by the annual fish population samples. Through frequently scheduled drawdowns, it is hoped that the need for drastic measures, such as those used in 1965, can be decreased or eliminated.

b. Wildlife. Wildlife management activities are provided for in letter agreements between the Corps and the Game and Fish Commission. The Commission holds about 25 one-acre to one and one-half acre food plots for small game and waterfowl. These are fenced to keep out free-ranging livestock.

There are moderate populations of quail, dove, rabbit, squirrel, song birds and small mammals. The deer population is low. During the fall, dove, rabbit and quail hunting is prevalent, and the area is managed to benefit these particular shooting sports.

3-11. Recreation. Located in Logan and Yell Counties, Blue Mountain Lake is one of eight lakes in the Corps' original flood-control program for the Arkansas River Basin. Attendance records indicate that many of the visitors to the park are fishermen. The Arkansas Game and Fish Commission stocks the lake with channel catfish, large-mouth bass, white bass and crappie.

To date, a total of five parks have been created with one planned for later development. The parks provide opportunity to enjoy many varieties of water-oriented sports such as swimming, water skiing, and boating. The number of visitors using the camping facilities only is not very significant.

A large number of persons participating in water oriented sports do utilize the camping facilities as an auxiliary activity during stays longer than one day. Campers and picnickers will find grills, firewood, tables, drinking water, shelters and sanitary facilities available for their convenience. The hunter may be attracted by the deer, squirrel and rabbit that are available. Bird watchers have the opportunity to view over 300 different species of birds found in the area.

3-12. Historical sites. There are no sites in the immediate area of the lake which would be affected by the National Historic Preservation Act of 1966. The Arkansas Historical Preservation Commission does list several structures in the zone of influence which are worthy of preservation. The Campbell home in Ratcliff, the Logan County Courthouse in Paris and Park's Place east of Prairie View,

built in the period between 1880 and 1910, are listed by the Commission. At the little town of Chismville, in Logan County, seven miles north of Booneville, is the residence-tavern of Dr. Stephen H. Chism. It was built about 1840, and is one of the oldest standing structures in the area. The two-story building was constructed of square-cut, square-notched logs, and housed many notable travelers as well as the legendary outlaw, Belle Starr. The roads from Ft. Smith to Little Rock and from Ozark to Waldron cross at Chismville.

At Dardanelle the Federal Government established an agency to reduce the dangerous state of friction which had developed between the Osage and Cherokee Indians. A Colonel David Brearly was in charge. In 1823 Colonel Brearly negotiated a treaty by which the Cherokee agreed to relinquish their land south of the Arkansas River and move to a designated area north of the river. This historic meeting took place in a grove of oak trees on the right bank of the Arkansas River. Two of these oak trees are still growing today on the river bank behind the water works at Dardanelle on North Front Street. These trees are known as Council Oaks.

In 1857 the Federal Government authorized John Butterfield to establish mail routes by stagecoach from St. Louis and Memphis to San Francisco. The two routes met at Ft. Smith, Arkansas. The Memphis route crossed the Arkansas River at Dardanelle and paralleled the present State Highway 10 near the site of Blue Mountain Lake.

In 1818 Stephen H. Long, explorer and engineer, was returning from a mapping and exploring trip to the Rocky Mountains. On his way eastward he explored the Arkansas River and its tributaries. His trail crossed the Petit Jean River between the present day town of Booneville and the headwaters of Blue Mountain Lake.

3-13. Archeological sites. In January, 1924, an expedition headed by Mr. M. R. Harrington, from the Museum of the American Indian, came to a ridge in Yell County between Petit Jean Creek and the Arkansas River in the region of Havana. Harrington and his party obtained hundreds of samples of vessels of different types such as pots, bowls, jars and animal and human effigies. Much to the disgust of the archeologist, the natives of the area started a miniature treasure rush. (The harvest had been poor, and they were looking for a way to supplement their income). Their haste and lack of knowledge resulted in the destruction of an archeological find that has never been surpassed and seldom equalled in the history of the Indians of the Arkansas River Valley.

No professional, systematic archeological work was done before construction of Blue Mountain Lake, although the Arkansas Archeological Survey is certain that archeological sites are located in the area. Aside from the artifacts discovered by Harrington a few miles away, several possible sites have been reported to the Survey by amateurs, but these have not been investigated.

The fact that adequate archeological information for Blue Mountain is not available reflects the limited professional personnel and funding, rather than a lack of significant archeological resources in the area. The Petit Jean River Valley apparently was an important area of contact between the prehistoric peoples of the Arkansas River Valley, the Ouachita River Basin, and the Red River Valley. Archeological research in the area probably would be successful (See letter from Arkansas Archaeological Survey in Section V)..

3-14. Historical background. Information on the early life and customs of people in the region is difficult to obtain. Of necessity, such information is generally the reminiscence of the descendants of earlier generations. The information provided was obtained from the files of the Arkansas History Commission and hopefully will provide a cursory outline of events of the past.

Civil War activity in the region was composed mostly of a few minor skirmishes. During the early part of the war, and as long as the territory was in the lines of the Confederate Army, it was overrun by guerrillas and bushwhackers, who preyed upon and severely punished those sympathetic to the Union. The action known as the Haguewood Fight took place in December, 1863, a half mile east of Paris. Federal infantry commanded by Captain Parker conducting a wagon train enroute from Dardanelle to Fort Smith were attacked by Joe Shelby and a regiment of Confederate Cavalry. In the same month, the first battle fought in Dardanelle occurred between Captain Hills of the Confederacy and Colonel William Brooks of the Union. In 1865, another battle was fought in Dardanelle, Colonel William Brooks of the Confederacy attacked Major Jenks, Commander of the Federal Garrison at Dardanelle, and after fighting about three hours, the Confederate Commander withdrew.

In the vicinity of the lake, Logan and Yell Counties were formed as a result of the transportation problems caused by the Arkansas River. Yell County at one time was a portion of Pope County, and Logan County was created from part of Scott County. In the days when travel was by horseback, ox cart, or on foot, the Arkansas River was a major transportation obstruction. Both counties have two county seats (Logan County: Paris and Booneville, and Yell County: Dardanelle and Danville). The double county seats are a result of the bad roads and crude means of travel in the early days of the counties. Both counties have one county seat located on the Arkansas River where river transportation was easily available. The second county seat is in an interior location and was manned by deputies carrying out governmental activities.

There were few schools, and these were taught only during warm weather as the log houses were too cold for use during winter. Subiaco College at Subiaco, Arkansas was founded by the Benedictine Abbot from St. Meinrad, Indiana in 1878. The first mission was a log house with a lean-to and a shed porch made of goods boxes. Subiaco College has developed into a prominent educational facility in the Mid-South area.

a. Logan County. The first white men to visit Logan County were those in DeSoto's expedition which crossed the Arkansas River in 1541 somewhere between Dardanelle and Fort Smith. A local legend holds that DeSoto fought a series of battles with the Indians on the side of Mt. Magazine, and the explorers hid many treasures in the surrounding caves. Prior to 1800, the Arkansas River and adjacent territory were frequently explored by the subjects of France and Spain in their search for valuable metals. Permanent white settlement did not begin until after 1800.

In 1814, several persons made homeless by the New Madrid earthquake settled in what was to be Logan County. Similarly, after the 1818 treaty placed the Cherokees in possession of the territory north of the river, white settlers from that area gravitated southward. It was not until December, 1875, that the County was created and the name changed from Sarber to Logan.

"Gold in Logan County" was the news in 1886. To accommodate the rush of prospectors, hotels and stores were quickly erected. A post office was established named "Golden City." People flocked in from Colorado, Utah, Nevada and Ohio, and many came from St. Louis. What little gold existed was quickly panned out and the "Golden City" became a ghost town.

b. Yell County. Yell County was formed in December, 1840, and named for Archibald Yell who was governor at the time. The county was created from parts of Pope and Scott Counties, but it was 1845 before Pope County relinquished to Yell County all land south of the Arkansas River. The first courthouse in Danville was a round log hut built in 1850. The structure was replaced in 1871 and remodeled in 1925.

In 1891, a pontoon bridge across the Arkansas River at Dardanelle was constructed at a cost of \$25,000. The bridge, 2,008 feet long by 18 feet wide was supported by pontoon boats held in place with cables anchored to seven towers placed at intervals across the river. Safe and predictable in normal conditions, the bridge was not dependable in times of high water when it was necessary to disconnect it and swing the pontoons to the shoreline. The bridge became too expensive to maintain, and in 1929, the Arkansas Highway Department opened a steel and concrete bridge.

3-15. Population. Population of both Logan and Yell Counties has declined by approximately 4,000 persons during the last 80 years. Counts from each decennial census for the counties is presented in Table 3-1.

TABLE 3-1

COUNTY POPULATIONS

	<u>Logan</u>	<u>Yell</u>
1970	16,789	14,208
1960	15,957	11,940
1950	20,260	14,057
1940	25,967	20,970
1930	24,110	21,313
1920	25,866	25,655
1910	26,350	26,323
1900	20,563	22,750
1890	20,774	18,015

It is important to note that within the last ten years the population of both counties has increased slightly. Though this cannot be attributed to one particular cause, the lake certainly has had its impact and has probably contributed to the population growth by attracting some new residents.

Taking a more detailed look, the U. S. Census divides counties into townships. These are not to be confused with the township used in surveying, but rather are subdivisions of the county used to further break down population figures. It is interesting to note that in both Logan and Yell Counties, the townships in which Blue Mountain Lake is situated experienced population gains between 1960 and 1970. While these gains were by no means outstanding, this is still a reversal of past trends and again consideration must be given to the influence of the lake and its attraction as a residential area.

3-16. Economic and Industrial Conditions. Economic conditions in Logan and Yell Counties have been improving over the past year as shown in Table 3-2. Most of the industries listed in the 1973 Directory of Industry published by the Department of Industrial Development have gone into operation in the last ten years.

In Logan County, there has been a slight change in the employment situation. Between 1966 and 1971, the number of business establishments declined roughly six percent; however, employment was up by nearly 25% (data furnished by County Business Patterns for Arkansas published by the U. S. Department of Commerce.)

TABLE 3-2
ECONOMIC INDICATORS

	<u>LOGAN COUNTY</u>		<u>YELL COUNTY</u>	
	<u>Number</u>	<u>% of Change</u>	<u>Number</u>	<u>% of Change</u>
Civilian Labor Force				
1960	4,400		10,475	
1970	5,125	16.5	16,050	53.2
Employment				
1960	3,875		9,500	
1970	4,775	23.2	15,075	58.7
Manufacturing Employment*				
1960	449		480	
1970	1,228	173.5	1,269	164.4
1971				
Average Weekly Earnings*				
1960	43.57		51.29	
1970	79.28	82.0	85.59	66.7
1971	90.62	14.3	85.28	0.3
Retail Sales (millions)				
1963	\$ 15.3		\$ 9.4	
1967	18.4	20.3	13.8	46.8
Bank Deposits (millions)				
1960	\$6,292		5,273	
1970	20,794	230.5	21,287	303.7

*Employment and earnings subject to the provisions of the Arkansas Employment Security Law.

SOURCE: University of Arkansas, IREC, State and County Economic Data for Arkansas, 1972.

Several of the major parameters for measuring the economy are listed in Table 3-2. Logan County has gained in all areas, but especially in manufacturing employment and bank deposits. Positive gains in these areas are indicative of a healthy, growing economy. While the weekly earnings are still below the State average, significant progress in increasing incomes has been made, especially in 1970.

With the exception of the change in weekly earnings in 1970, Table 3-2 indicates that Yell County has experienced more rapid economic growth than Logan. The overall growth can probably be traced to changes in the manufacturing segment which employs the largest number of persons. Service occupations and retail trade rank second and third in the number employed.

It is unfortunate that the impact of tourism cannot be accurately measured. While Blue Mountain Lake has certainly affected motel and restaurant facilities in the area, substantiating data is not available. It is interesting to note, however, that although the 1971 average weekly earnings for Logan and Yell Counties are approximately the same, the retail sales statistics show a difference of \$4.6 million in favor of Logan County. Again, while all the underlying causes are not apparent, certainly tourism is a factor.

3-17. Education. Educational climate in Logan and Yell Counties has been declining in the last four years. Data from the "House Concurrent Resolution No. 58" report by the Department of Education showed increases in assessed valuation, tax millage, average daily attendance, enrollment and teachers' salaries between 1967-68 and 1971-72 school years. Unfortunately, while the school districts involved have been making progress, the relative position of the county school districts to the State, especially in terms of ADA expenditures, one of the more effective educational parameters, is declining. In 1971-72 the districts were farther away from the State average than they were in 1967-68.

SECTION IV

FACTORS INFLUENCING RECREATIONAL DEVELOPMENT

4-10. Region served. Visitor surveys conducted at Blue Mountain Lake during the summer and winter seasons of 1969 indicated that 80 percent of the project visitors originate within 75 highway miles of the project. Included in this zone of influence as shown on Plate 2 are the following counties, or portions thereof: Conway, Crawford, Franklin, Johnson, Logan, Perry, Polk, Pope, Saline, Scott, Sebastian, and Yell. Natural resources of the area include timber, natural gas and various minerals (coal, sand, gravel, manganese, zinc, etc.). Rough terrain and the large acreage of the Ouachita National Forest emphasize the extent of woodland and the limited cropland. Much crop land is in pasture and hay is the major crop, followed by corn. General farming concentrates on livestock production. A projection of the population and income growth is shown in Table 4-1.

TABLE 4-1

POPULATION - INCOME PROJECTIONS FOR THE 80-PERCENT ZONE
OF INFLUENCE - BLUE MOUNTAIN LAKE

Year	Population	Per capita personal income	Total income (\$1,000)	Rate of Increase
(base)	:	:	:	:
1970	: 269,499	: 2,864	: 771,909	: 1.000
1972	: 275,000	: 3,000	: 825,000	: 1.069
1973	: 280,000	: 3,150	: 882,000	: 1.143
1975	: 285,000	: 3,400	: 969,000	: 1.255
1980	: 301,000	: 4,040	: 1,216,000	: 1.575
1985	: 320,000	: 4,800	: 1,536,000	: 1.990
1990	: 336,000	: 5,700	: 1,915,200	: 2.481
1995	: 360,000	: 6,600	: 2,376,000	: 3.078
2000	: 382,000	: 7,600	: 2,903,200	: 3.761
2005	: 402,000	: 8,800	: 3,537,600	: 4.583
2010	: 415,000	: 10,000	: 4,150,000	: 5.376
2015	: 428,000	: 11,800	: 5,050,400	: 6.543
2020	: 440,000	: 13,500	: 5,940,000	: 7.695
:	:	:	:	:

4-02. Competing recreational areas and experienced visitation. Within 50 highway miles of Blue Mountain Lake there are three Corps of Engineers lakes (Dardanelle and Ozark Lakes on the Arkansas River, and Nimrod Lake on the Fourche La Fave River). In addition to these projects, there are two state parks, Mount Nebo and Petit Jean. Also, there are several National Forest campgrounds in the area. In spite of the competition, visitation to Blue Mountain Lake increased 356 percent between 1950 and 1971. Visitation during 1972-73 was abnormally low due probably to high lake levels. Several access roads to parks were inundated. Annual visitation is shown in Table 4-2.

TABLE 4-2

VISITATION TO BLUE MOUNTAIN LAKE

Year	Visitation	Rate over base year 1950	Increase or decrease
1948	45,900	---	---
1950	121,737	1.00	---
1955	214,000	1.76	1.76
1960	265,300	2.18	1.24
1965	255,200	2.10	-0.96
1970	411,700	3.38	1.61
1971	555,200	4.56	1.35
1972	402,200	3.30	-0.72
1973	265,000	2.18	-0.66

4-03. Determination of present recreational use.

a. Source of use data. Data for this report were taken from visitor surveys conducted by Little Rock District personnel at Blue Mountain Lake during 1969. This information was collected, reported, analyzed, and interpreted in a uniform manner. Seasonal factors derived from the surveys were applied to the monthly traffic counter readings to estimate visitor activity participation. The surveys also determined points of visitor origin, as well as the relation of weekend to week-day visitation.

b. Planning base. The normal summer weekend day demand is the basis for estimating the adequacy of the land and water areas, and types of facilities required to adequately serve the recreational users of the project. Average summer weekend day-use of the project, expressed in activity days, was determined by the following procedure:

1. Determine the total summer visitation for the months of June, July, and August from monthly visitation reports. Divide this total by 13 (13-week summer base) to arrive at an average summer weekly visitation. The average summer weekly visitation was then multiplied by the percentage of visitors using the project on the weekend to arrive at the average summer weekend demand. It was assumed that the visitation was equally distributed between Saturday and Sunday. Therefore, one-half of the average summer weekend visitation would equal the visitation for an average summer weekend day.

2. The number of activity days which these visitors generated was calculated by multiplying the average summer weekend day visitation by the weekend percentage of participants in each activity. The surveys were conducted as the visitors entered the lake area; thus, they were expressing their desire to participate in various recreational activities.

c. Participation rates. The average summer weekend day, summer, and annual participation rates for the surveyed outdoor recreation activities at Blue Mountain Lake during 1969 are shown in Table 4-3.

TABLE 4-3

PARTICIPATION RATES EXPRESSED IN
ACTIVITY OCCASIONS PER VISIT

Activity	Average summer	Weekend day (1)	Summer (1)	Annual (2)
Boating	0.02	0.01	0.01	
Fishing	0.25	0.36	0.27	
Water Skiing	0.15	0.11	0.04	
Swimming	0.34	0.34	0.11	
Subtotal	0.76	0.82	0.43	
Camping	0.13	0.20	0.09	
Picnicking	0.30	0.25	0.11	
Subtotal	0.43	0.45	0.20	
Sightseeing	0.29	0.26	0.58	
Total	1.48	1.53	1.21	

(1) Source 3912A - Survey Summer Summary, 1969.

(2) The annual rates were calculated by using data shown in the annual summary of recreational visitation data. The annual participation for each activity was divided by the annual project visitation.

d. Total activity occasions generated during 1972. Application of the participation rates shown in Table 4-3 to the 1972 annual, summer, and average summer weekend day visitation to the project gives an indication of the number of activity occasions that the Blue Mountain Project will be required to support. The year 1972 was chosen as base year because 1973 visitation was unrealistically low due to prolonged flooding. See Table 4-4.

TABLE 4-4

ACTIVITY OCCASIONS GENERATED AT BLUE MOUNTAIN - 1972

Activity	Average summer weekend day	Summer	Annual
Boating	60	1,391	4,022
Fishing	749	50,076	108,594
Water skiing	449	15,301	16,088
Swimming	1,019	47,294	44,242
Subtotal	2,277	114,062	179,946
Camping	389	27,820	36,198
Picnicking	899	34,775	44,242
Subtotal	1,288	62,595	80,440
Sightseeing	869	36,166	233,276
Total	4,434	212,823	493,662
Number visitors	2,996	139,100	402,200

Summer Visitation - 139,100 or 35% *1 total visitation
 Average Summer Week - 139,100 x 1/13 *2 = 10,700
 Average Summer Weekend - 10,700 x 56% *3 = 5,992
 Average Summer Weekend Day - 5,992 x 50% *3 = 2,996

*1 Taken from 1972 visitation.

*2 % of Summer visitation on weekends taken from 1969 visitation survey.

*3 1/2 of Weekend visitation.

4-04. Projected recreational use. The number of normal summer weekend day activity occasions experienced during the base year was projected to future years on the premise that increasing zonal income would produce proportionate increases in the number of activity occasions. Total income was used for these projections in order to consider increases in both population and per capita personal income. A summary of the projected use of Blue Mountain Lake is shown in Table 4-5.

TABLE 4-5

PROJECTED AVERAGE SUMMER WEEKEND DAY USE OF
BLUE MOUNTAIN LAKE - EXPRESSED IN ACTIVITY OCCASIONS

	: 1972	: 1980	: 1990	: 2000	: 2010	: 2020
Total zone income in \$1,000	:825,000	:1,216,000	:1,915,200	:2,903,200	:4,150,000	:5,940,000
Total activity occasions	: 4,434	: 6,535	: 10,292	: 15,603	: 22,304	: 31,925
Boating, skiing, fishing	: 1,258	: 1,854	: 2,920	: 4,427	: 6,328	: 9,058
Swimming	: 1,019	: 1,502	: 2,365	: 3,586	: 5,126	: 7,337
Subtotal	: 2,277	: 3,356	: 5,285	: 8,013	: 11,454	: 16,395
Camping	: 389	: 573	: 903	: 1,369	: 1,957	: 2,801
Picnicking	: 899	: 1,325	: 2,087	: 3,164	: 4,522	: 6,473
Subtotal	: 1,288	: 1,898	: 2,990	: 4,533	: 6,479	: 9,274
Sightseeing	: 869	: 1,281	: 2,017	: 3,058	: 4,371	: 6,257
Annual project visitation	:402,200	: 592,800	: 933,500	:1,415,300	:2,023,066	:2,895,800

4-05. Facility supply capacity. Each recreational facility is capable of supporting a certain number of activity occasions. This capacity is based on criteria contained in EM 1110-2-400, dated 1 September 1971, and is discussed as follows:

a. Picnic units. Each picnic unit will support 10 to 15 activities per day.

b. Camp units. Each camp unit will support 5 activities per average summer weekend day.

c. Group picnic shelters. One group picnic shelter should be provided for each 225 picnickers per average summer weekend day.

d. Swimming beach. Each 25 linear feet of beach shoreline will accommodate 50 persons at one time. With a turnover rate of 3, each 25 linear feet will support 150 swimmers per day.

e. Change shelters. One change shelter will be required for each swimming area with an expected peak attendance of less than 600 swimmers on an average summer weekend day.

f. Launching lanes. One launching lane is required for the first 40,000 annual visitors to each park. By considering the average number of vehicles with trailers and by considering other criteria contained in EM 1110-2-400 it has been determined that the initial launching lane can accommodate up to 72,500 yearly visitors in each park without undue delay in launching boats. This is based on the assumption that 15% of the vehicles will pull boat trailers and require boat launching access on the average summer weekend day which was the percentage established by survey in years past. A second lane is required where park visitations exceed 72,500 annual visits.

g. Sanitary facilities. One waterborne facility will be required for each 50 camp sites. One vault facility will be provided in areas having less than 25 camp sites. One waterborne facility will be required at any swimming beach with more than 600 swimmers per peak visitor daily use. One vault type facility will be required at any swimming beach with less than 600 swimmers per peak visitor daily use. One vault facility will be required for 2,500 picnickers on a normal summer weekend day.

4-06. Facilities required to serve the anticipated use of the project.

a. Facilities required to serve the base year (1972). The estimated number of facilities required to serve the public during the base year was determined by dividing the projected use shown in Table 4-5 by the facility supply capacity. The calculated facility requirements are compared with existing facilities in 1972. See Table 4-6.

TABLE 4-6

COMPARISON OF EXISTING FACILITIES WITH CALCULATED
FACILITY REQUIREMENTS FOR 1972 (Base Year)

Facility	: Number existing : 1 January 1972	: Calculated 1972 : : requirements	: Calculated : deficiency
Picnic units	: 8	: 60	: 52
Camp units	: 92	: 78	: 0
Group picnic shelters	: 4	: 4	: 0
Swimming beach - L.F.	: 150	: 170	: 20
Change shelters	: 1	: 1	: 0*
Launching lanes	: 7	: 10	: 0
Restrooms	: 9	: 7	: 0

*

Water area available for boating, fishing and water skiing will support only 295 boats. With 40 launchings per day per ramp recommended, only 7 ramps were required. There are 510 acres of water zoned for water skiing.

b. Future facility requirements. The facility supply capacities discussed in paragraph 4-05 were applied to the projected average summer weekend day use shown in Table 4-5 to determine future facility requirements through the year 2020. See Table 4-7.

TABLE 4-7

ESTIMATED FACILITIES REQUIRED TO SUPPORT ANTICIPATED
NORMAL SUMMER WEEKEND DEMAND OF BLUE MOUNTAIN LAKE

Facility	: 1972	: 1980	: 1990	: 2000	: 2010	: 2020	: Development : shown in plan
Launching lanes	: 7	: 12	: 19	: 19	: 19	: 19	: 8
Swimming beach-L.F.	: 170	: 251	: 395	: 598	: 855	: 1,224	: 750
Change shelters	: 1	: 2	: 3	: 4	: 5	: 7	: 3
Camp units	: 78	: 115	: 181	: 274	: 392	: 562	: 216
Picnic units	: 60	: 88	: 139	: 211	: 302	: 432	: 123
Group picnic shelters	: 4	: 6	: 9	: 14	: 20	: 29	: 7
Toilets	: 7	: 10	: 16	: 25	: 35	: 50	: 21

4-07. Recreation needs of the Blue Mountain Lake market area. The outdoor recreational needs for the Blue Mountain Lake Zone of Influence, as derived from the 1974 Arkansas State-wide Outdoor Recreation Plan (SCORP), are shown in Table 4-8. Recreational needs are defined as the difference in supply and demand. Data are a summation of minimum county needs plus minimum additional regional needs. The minimum county needs were taken from the individual county listings for each of the 12 counties within the established zone of influence. The minimum county needs were then combined with the minimum additional regional needs of Recreation Planning Regions 4 and 5 as defined in the SCORP. Planning region 4 consists of Crawford, Franklin, Logan, Polk, Scott and Sebastian Counties. Planning region 5 includes Conway, Johnson, Perry, Pope, and Yell Counties, plus 5 additional counties which are not in the Blue Mountain Lake Zone of Influence. Saline County is located in planning region 6.

TABLE 4-8

RECREATION NEEDS SHOWN IN THE ARKANSAS STATEWIDE
COMPREHENSIVE OUTDOOR RECREATION PLAN

Activity :	Units :	1975 :	1980 :	1985 :	1990 :
Boating :	Acres :	2,721:	2,720:	2,852:	2,965
Fishing :	Acres :	14,580:	15,858:	19,980:	27,046
Swimming :	Sq. Ft. :	166,458:	195,236:	238,954:	294,760
Camping - :	:	:	:	:	:
trailer :	Sites :	9:	14:	23:	33
Camping - :	:	:	:	:	:
tent :	Sites :	711:	824:	964:	1,138
Camping - :	:	:	:	:	:
group :	Beds :	7,858:	8,525:	9,559:	10,727
Picnick- :	:	:	:	:	:
ing :	Sites :	468:	639:	877:	1,157
Sight- :	:	:	:	:	:
seeing :	Acc occ :	3,620,688:	3,883,348:	4,393,740:	5,797,204
Trails - :	:	:	:	:	:
hiking :	Miles :	122:	129:	150:	181
Trails - :	:	:	:	:	:
horseback :	Miles :	4:	4:	5:	6
O.R.V. :	:	:	:	:	:
driving :	Miles :	113:	120:	136:	154
Waterfowl :	:	:	:	:	:
hunting :	Acres :	1,134:	1,467:	1,994:	2,580
Hunting :	Acres :	30,704:	35,054:	42,359:	50,464
:	:	:	:	:	:

4-08. Availability of project water and lands.

a. Water. The capacity of the water area and the fishery resources of Blue Mountain Lake will govern the future recreational use of the lake. Projections of these activities show that the optimum capacity for both fishing and boating will be reached by the year 1985. Experienced use of the lake and fishery resource data furnished by the Arkansas Game and Fish Commission were used in making this estimate.

(1) Water skiing and pleasure boating. There are 510 acres of the lake zoned for boating and water skiing. The area desirable for water skiing and pleasure boating was determined to be 20 acres per boat (see Outdoor Recreation Space Standards, Department of Interior, Bureau of Outdoor Recreation). The 510 acres will support 26 boats. With a turnover rate of 2 the area will support 52 boats engaged in pleasure boating or skiing.

(2) Fishing. There are 3,350 acres of water at conservation pool elevation. The Arkansas Game and Fish Commission has determined the fisheries production to be 60 pounds per acre per year, or 174,600 pounds. It was determined that one fisherman would catch 1 pound of fish per day per year.

(3) Optimum activity.

(a) Boating and water skiing. Within the 510 acres of the lake zoned for boating and water skiing there were 509 activity occasions per average summer weekend day, which is 1.00 activity occasion per acre of water.

(b) Fishing. Visitor surveys shows 27% of annual visitation participate. 174,600 activity occasions = 27% of visitation projected for about 1985.

b. Lands. A large portion of project lands available for recreational development is subject to occasional flooding because it is lower than the flood control pool elevation. The remaining developable lands contain steeply sloping hillsides. Lands suitable for recreational development consist of several relatively small areas. This restricts the number of facilities which may be provided. The facilities shown on the park plans represent the optimum use of the lands. This will meet the calculated demand to the year 1995. (See Table 4-7).

4-09. Interpretive development concepts. Recreation lands, no matter how large or small, contain features which should be pointed out and explained to visitors to those lands. These features may be physical in nature, such as land characteristics or animal and plant life. They may involve historical landmarks, legendary people of the past or present, or local activities available to the visitors. Interpretation is the disclosure of, or expansion upon, facts related to these features.

Blue Mountain Lake is a project which draws visitors from a relatively small surrounding area. Eighty percent of the visitors come from within 75 miles of the project. The interpretive program for Blue Mountain Lake should therefore focus upon experiences which would appeal to people who are familiar with the project area. For example, local history should be an important aspect of interpretive development. Even visitors from a local area are interested in learning more about their heritage. (This is the standpoint from which an interpretive program is recommended for development.)

a. Objectives. Visitors should be given an opportunity to pause and reflect upon their surroundings in order to develop a better understanding of them.

This should be achieved through visual and audible means of identifying important local plants, animals, and their relationship to each other and to man.

Also, visual and audible means should be used to explain geological phenomenon that are evident throughout the area. (This is a subject of which little is normally known by local inhabitants).

Visitors, whether native or not, have very few opportunities to learn about the specific history of an area. Since history, if presented properly, appeals to most people, highlights of the past should be related to the visitor. This should pertain to Indians of the area, exploration by early travelers, and even early uses or advantages of the river.

b. Factors affecting interpretive development. Access will be a limiting factor in developing Blue Mountain Lake for interpretive purposes. All early development will be in areas close to the dam since they are the most accessible and most visited areas on the lake.

Blue Mountain Lake receives substantially less visitors (1972 visitation was approximately 402,200) than most projects in the Little Rock District. Therefore, the program should strive to achieve the objectives stated previously with a minimum amount of facilities. Displays should be limited to those suitable for outdoors, and should be located in a small area in close proximity to the resident office. Facilities, such as plaques, trails, and trash receptacles should

be such that they may be easily maintained by project personnel.

Some enhancing features of the project area are the rugged growth along the shoreline, and on project lands, the lake setting created by the naturally steep sloping terrain in certain areas, and the beautiful surrounding Ouachita Mountains. Almost all of Blue Mountain Lake shoreline is still covered by natural forest growth. Mt. Magazine, the highest point in Arkansas, which is located due north of the dam, may be seen from almost anywhere on the lake shoreline.

SECTION V

COORDINATION WITH OTHER AGENCIES

5-01. Original coordination. Development of Blue Mountain Lake and dam and related resources has been coordinated with all interested Federal, State and local governmental agencies. In order to make the best use of the lake, the National Park Service, the U. S. Forest Service, the U. S. Soil Conservation Service, the Arkansas Game and Fish Commission and the Arkansas Publicity and Parks Commission were contacted for their input. A public hearing was held on 26 February 1947, at Booneville, Arkansas, which was attended by about 150 people including representatives of various Federal, State and County agencies, local organizations and interested individuals. The plan was favorably received by those in attendance.

5-02. Subsequent coordination. An updated Master Plan was prepared and approved on 25 July 1966. It was not felt that a public hearing was necessary.

5-03. Current coordination. During the preparation of this updated Master Plan, interested local, state and Federal agencies were notified that the Master Plan was going to be updated, and their comments and recommendations were requested concerning the Master Plan and operation of the project. Replies from these agencies are included in this section of the Master Plan. The following is a discussion of the replies received or an indication of agencies that did not reply:

a. Arkansas Department of Pollution Control and Ecology. Information from this agency has been incorporated in Section 3-07, Health Conditions, of this Master Plan.

b. Arkansas Archeological Survey. Information and suggestions from this agency were incorporated in Paragraph 3-13, Archeological Sites. (Information concerning the 1924 expedition was obtained from the files of the Arkansas History Commission.)

c. Arkansas Department of Planning. Self-explanatory.

d. U. S. Department of the Interior, Fish and Wildlife Service. Self-explanatory.

e. Arkansas Department of Health. Self-explanatory.

f. Arkansas Geological Commission. Information from this agency has been incorporated in Section 3-04, Physiography, of

the Updated Master Plan.

h. Arkansas Department of Parks and Tourism. Self-explanatory.

i. Agricultural Stabilization and Conservation Service, Danville, Arkansas. No reply.

j. Agricultural Stabilization and Conservation Service, Paris, Arkansas. No reply.

k. Arkansas Game and Fish Commission. Information from this Agency has been incorporated in Paragraph 3-10, Fish and Wildlife.



STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE
LITTLE ROCK, ARKANSAS 72209

501 371-1701 GEN. OFF.
501 371-1136 AIR DIV.

April 18, 1973

Mr. Calvin W. Shelton
Acting Chief, Engineering Division
Little Rock District, Corps of Engineers
P.O. Box 867
Little Rock, Arkansas 72203

Re: Lakes Nimrod, Blue Mountain and Bull Shoals

Dear Mr. Shelton:

Receipt is acknowledged of your letter dated April 4, 1973 requesting information on above referenced lakes.

Based on the results of recent surveys conducted by this organization in the White River and Arkansas River Basins no serious sources of water pollution were found existing as to warrant compliance actions nor affecting presently the water quality of these three lakes. However, potential sources of water pollution do exist within the respective watersheds. These consist primarily of point sources such as municipal sewage treatment plants, unsewered municipalities or built-up areas and recreational-use areas. There are also non-point sources such as drainage or run-off from agricultural areas, stock farms, and feed lots which may account for residual toxic herbicides or high-nutrient fertilizers and other by-products of the land-uses around the lakes. In particular, the potential point sources are as listed hereunder:

Blue Mountain Lake:

1. City of Booneville - Has a secondary wastewater treatment plant consisting of clarifier, sludge digester and stabilization ponds. Effluent is finally discharged to Petit Jean River.
2. Booneville State Sanatorium facilities - has a mechanical sewage treatment plant consisting of clarifiers, trickling filter, sludge digester and drying beds. Effluent also discharges to Petit Jean River.

Mr. Calvin W. Shelton
Page Two
April 18, 1973

3. Magazine - A community with a population of 588 but without public sanitary sewer facilities.
4. Blue Mountain - A built-up area with some 94 population count but no public sanitary sewer facilities.
5. Sugar Grove - A built-up area without public sanitary sewer facilities.

Nimrod Lake:

1. Plainview - A community with a population of 548 but without public sanitary sewer facilities.
2. Built-up areas which have no public sanitary sewers are Kingston, Gilkey, Y-City, Boles, Cedar Creek, Nola, Gravelly, Bluffton, Briggsville, Wing, Rover and Fourche Junction.

Bull Shoals Lake: (Sources located within Arkansas Stateline only)

Small communities without public sanitary sewers are Lowry, Sugar Loaf, Diamond City, Lead Hill, Monarch, Peel, Lakeway, Oakland and Fairview.

In general accelerated eutrophication has come to be recognized as a very important aspect of the overall problem of water quality degradation in the lakes of this country. As more man-made lakes are created it becomes increasingly important to take steps while the lakes are still young to assure that the eutrophication processes are kept as nearly as possible at natural levels. The possible remedial measures that should be considered, therefore, in planning for the further development and use of the reference projects are:

1. Controlling wastewater effluents and runoff from communities and developments around the periphery of the lakes and tributary streams;
2. Incorporating or annexing by purchase, condemnation or other means the entire watersheds into the lake reservation areas in order to prevent further encroachment.
3. Controlling to some extent the use of the lands around the lakes; and
4. Monitoring the progress of the enrichment processes to detect accelerated eutrophication at the earliest possible time.

Mr. Calvin W. Shelton
Page Three
April 18, 1973

To implement the last safeguard, pollution control repeat stations may be established in the lakes and downstream of potential pollution sources and problem areas and regular periodic surveys undertaken to determine the extent, if any, of water quality degradation, both chemical, biological or bacteriological.

Bull Shoals Lake was found to contain water of exceptionally good quality in all respects. There are various reasons for this. Primarily, the relatively low degree of development around this lake along with the fact that the Corps of Engineers maintains a sufficiently broad buffer zone around the periphery of the lake protects against widespread encroachment or development near the water's edge.

Nimrod Lake is exposed to sanitary wastewater runoff from the City of Plainview which is located on the north lake shores and has no public sanitary sewers. Water samples obtained at Porter Creek which receives the drainage from this community showed some levels of total coliform bacteria. So did samples obtained at Highway 27 located on the western end of the lake and near the confluence with Fourche La Fave River.

Sampling stations located in Blue Mountain Lake showed similar levels of total coliform bacteria. Like Lake Nimrod this lake is exposed to runoff from unsewered communities located upstream.

Both Blue Mountain and Nimrod Lakes are within the Arkansas River Basin the lower portion of which is still being currently surveyed by this Commission for existing and possible sources of water pollution. The results of this survey upon completion will be available in a report form.

Should additional information which we can furnish be required, please let me know.

Very truly yours,



A. DeGuzman
Engineer

AD:msd



ARKANSAS ARCHEOLOGICAL SURVEY

DIRECTOR • CHARLES R. MCGIMSEY III
STATE ARCHEOLOGIST • HESTER A. DAVIS

Coordinating Office
University of Arkansas Museum
Fayetteville, Arkansas 72701

April 16, 1973

Mr. Calvin W. Shelton
Acting Chief, Engineering Division
Little Rock District, Corps of Engineers
P.O. Box 867
Little Rock, Arkansas 72203

Dear Mr. Shelton:

This letter is in response to your letter of 3 April 1973, reference code SWLED-PV, requesting information on the archeological resources of the areas of Nimrod, Blue Mountain and Bull Shoals Lakes.

We cannot provide you with the archeological data you need simply because we have not yet had the opportunity to collect this kind of information. We would need to undertake a research project around the three lakes in order to find out where sites are located and to determine their significance.

A brief study, limited to site location survey and minor test excavation, was conducted before construction and flooding of the Bull Shoals reservoir. Twenty-five sites were located in the Arkansas portion of the reservoir, primarily on the narrow bottomlands of the White River or at the juncture of tributaries with the White River. All of these were within the reservoir conservation pool. Over the past 15 years, a few site locations have been reported to the University Museum which are being eroded by the lake between the conservation and flood pool elevations. No archeological research has been conducted above the flood pool.

No archeological research has been undertaken in the Ouachita Mountains region where Nimrod and Blue Mountain reservoirs are located, and ^{no} site surveys were conducted before the reservoir construction. We have only very limited knowledge from scattered prehistoric sites reported in the area.

The fact that we do not have adequate information on the archeological resources of either the Nimrod and Blue Mountain or the Bull Shoals areas reflects the limited professional personnel and funding available rather than lack of significant archeological resources in these areas. The Petit Jean and Fourche la Pave river valleys apparently were important areas of contact between the prehistoric peoples of the Arkansas River valley and of the Ouachita River basin and the Red River valley. The White River was an important route of contact between the peoples living on the Mississippi alluvial plain and those in the interior of the Ozarks.

In order to recover and preserve information on the archeological resources before these resources are destroyed, it will be necessary to undertake a research project in those areas where lake developments are planned before those developments are initiated. This is important because of the increasing destruction of prehistoric sites. While no individual project development may appear to be doing a great amount of damage, the accumulation of many projects

Shelton -2-

is creating a major threat to the preservation and recovery of archeological resources.

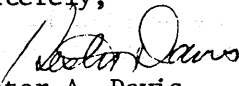
We think that interpretive programs about the prehistoric utilization of an area should be developed whenever possible. The research for this type of program can be done at the same time as recovery research discussed above. There can be little doubt but what the potential for an interpretive program--in the form of interesting and significant sites--is in the areas of these three lakes. Pointing out the locations of sites to the public, however, does not provide an understanding of what the way of life was like for the occupants of that site or how it fits within the broader utilization of the region.

A good interpretive program could be developed in two stages. First, it would be necessary to undertake an intensive site location survey. During this survey the archeologist would locate sites, study them in relation to the local topography and collect an adequate sample of artifacts to establish the period, or periods, of occupation and evaluate the significance and potential of the sites. This would require minor test excavations to determine the extent, depth and content of the sites located. As a result of the intensive survey, it would be possible to establish the cultural relationship and periods of occupations within the area and the importance of the various sites. A simple interpretive presentation could be developed from this information alone. The most significant sites should then be excavated in order to provide details about the prehistoric lifeway. Exhibits and booklets for the information centers and fireside talks could be developed and sites themselves could be "stabilized" as exhibits.

The field work, analysis and report writing for the intensive surveys would probably take at least one year for each reservoir area, while the more extensive site excavations would have to extend over several years. The Arkansas Archeological Survey is not funded to undertake such a research project on its own for federal and state agencies, but arrangements could be worked out so that we could do the work for you.

What I am trying to say, relative to your Master Plan, is that at this time we do not have adequate archeological information which would be of use to you in planning future development. On the other hand, before any development takes place--in fact as a part of the planning process--archeological research should be provided for through which interpretive information would become available. I look forward to further correspondence with you as your plans develop for the projects. If it would help, I could come to Little Rock to discuss these problems with you. If we can be of further service in any way, please let me know.

Sincerely,


Hester A. Davis
State Archeologist

HAD/jg

cc: National Park Service
Arizona Archeological Center
Box 49008
Tucson, AZ 85717

Regional Director, Southwest Region
National Park Service, Box 728
(Attn: Calvin Cummings, Archeologist)
Santa Fe, NM 87501



DALE BUMPERS
GOVERNOR

ARKANSAS
DEPARTMENT OF PLANNING
CAPITOL HILL BUILDING
LITTLE ROCK, ARKANSAS 72201
AREA CODE 501 371-1211 / 371-1301

CHARLES T. CROW
DIRECTOR

April 6, 1973

Mr. Calvin W. Shelton
Acting Chief, Engineering Division
Department of The Army
Little Rock District, Corps of Engineers
P. O. Box 867
Little Rock, Arkansas 72203

Dear Mr. Shelton:

Thank you for the opportunity to comment on your revision of the Master Plans for Development and Management of Nimrod, Blue Mountain, and Bull Shoals Lakes.

Bull Shoals Lake, Blue Mountain Lake, and Nimrod Lake are three very fine multi-purpose recreational areas. They all offer great fishing, camping, boating and swimming to increasing numbers of visitors. I am sure that during the updating the increased visitation will be a major factor considered.

Development of more basic camping areas, nature trails, and regulation or restriction of off-road vehicles are three recreational uses to be evaluated.

If we can be of further assistance, please let us know.

Sincerely,

A handwritten signature in dark ink, appearing to read "Doug Blair".

Doug Blair
Assistant Program Manager
Environmental Planning Division

DB/ab



United States Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

17 EXECUTIVE PARK DRIVE, N. E.
ATLANTA, GEORGIA 30329

AIRMAIL

July 5, 1973

District Engineer
U.S. Army Corps of Engineers
P.O. Box 867
Little Rock, Arkansas 72203

Dear Sir:

Reference is made to your letter dated April 4, 1973, SWLED-PV, which requested information relative to updating Master Plans for Development and Management of Nimrod, Blue Mountain, and Bull Shoals Lakes. Reference is also made to excerpts from a draft of the master plans which were transmitted to Mr. Paul Smith of our Vicksburg, Mississippi, field office by letter of April 20 from your office.

The excerpt for Bull Shoals Lake mentions that raccoon, mink, deer, and turkey have benefited as a result of the lake. Our comments on this matter are that inundation of habitat for these species has had net adverse effects upon them. Also, bays, coves, and inlets afford little if any protection to game animals from predation by dogs and wolves.

The statement that the economy of the area has greatly benefited by the overall enhancement of fish and wildlife potentialities which have resulted from construction of Bull Shoals is also questionable. Reservoir and tail-water fishing and waterfowl benefits generally do occur as a result of impoundments. However, on the negative side there are generally losses of stream fishing, big game, small game, fur animal, and wildlife-oriented potential because of inundation. Although man-day utilization could increase by virtue of public ownership and access, the potential capability of the area to produce many species and provide wildlife-oriented recreation enjoyment is impaired. An abundance of reservoir waters is present in the Ozark Plateau region, and more are being planned. We view Bull Shoals as a highly popular recreational area, but one in which there has been an overall net loss of fish and wildlife habitat needs for the region.

Following is a list of general items that we believe are worthy of your consideration in updating the Master Plans for Development and Management of Nimrod, Blue Mountain, and Bull Shoals Lakes.

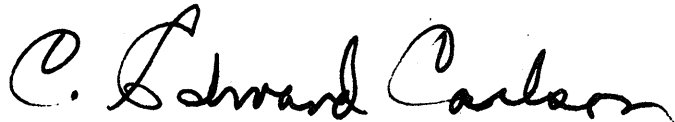
1. Manage all resources and activities consistent with soil and space capabilities and to improve the quality of air, water, and natural beauty;

2. Cooperate with other Federal, state, and local government agencies and national, state, and local associations, organizations, foundations, and institutions of higher learning in identifying, protecting, interpreting, and developing significant wildlife-oriented recreation opportunities;
3. Involve state game and fish departments in all activities which may have an impact upon fish and wildlife resources;
4. Cooperate with state agencies in establishing areas needed to provide special hunting, fishing, general recreation and management needs (i.e.; zoning for primitive weapons hunting, floating fishing piers, water skiing, swimming, waterfowl hunting, etc.);
5. Identify areas where limited access must be maintained to provide high quality hunting for bear, deer, or wild turkey or which are needed to protect wildlife that require an undisturbed environment;
6. Post all lands available for public use and areas that have zoning restrictions;
7. Operate recreational facilities only where adequate operational and maintenance services can be provided. Close facilities where these services cannot be provided;
8. Administer lands and waters to prohibit use beyond carrying capacity;
9. Stabilize eroding areas;
10. Monitor water quality in areas where activities could alter the environment;
11. Limit camping to areas designated and developed for that purpose;
12. Restrict motorized vehicle use to roads, parking areas, and designated camping areas;
13. Apply suitable surfacing on the roads, trails, and parking areas to accomplish a quality job for protecting air, water, soil, and natural beauty; and,

14. Exclude livestock from areas where irreconcilable and unmanageable conflicts exist with other resources or proper forage resource use.

We appreciate this opportunity to provide comments for updating the master plans for these three Ozark reservoirs. Please continue to call upon us whenever we can be of assistance in planning for fish and wildlife conservation for these reservoirs and their associated areas of influence.

Sincerely yours,

A handwritten signature in cursive script, reading "C. Edward Carlson". The signature is written in dark ink and is positioned above the typed name.

Regional Director



United States Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

17 EXECUTIVE PARK DRIVE, N. E.
ATLANTA, GEORGIA 30329

AIRMAIL

April 27, 1973

District Engineer
U.S. Army Corps of Engineers
P.O. Box 867
Little Rock, Arkansas 72203

Dear Sir:

Reference is made to Mr. Calvin W. Shelton's April 4, 1973, letter, SWLED-FV, requesting our comments for consideration in updating the Master Plans for Development and Management of Nimrod, Blue Mountain, and Bull Shoals Lakes.

The suggested date of April 20, 1973, for receipt of our comments did not provide adequate time for meaningful consideration of fish and wildlife resources in project planning. Therefore, we request that our Vicksburg, Mississippi, field office be provided current draft copies of the new master plans. Upon receipt of these plans, we will provide you with our comment within 60 days.

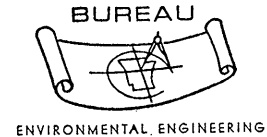
Sincerely yours,

Robert T. Webb

Acting Regional Director



ARKANSAS STATE DEPARTMENT OF HEALTH
LITTLE ROCK



XXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXX

April 10, 1973

In Reply Refer To

Mr. Calvin W. Shelton
Acting Chief, Engineering Division
Little Rock District, Corps of Engineers
Box 867
Little Rock, Arkansas 72203

Re: Master Plans for Development and Management
Nimrod, Blue Mountain, Bull Shoals Lakes

Dear Mr. Shelton:

Reference is made to your letter dated April 4, 1973, requesting information to be considered in the planning for development and management of the referenced Lakes.

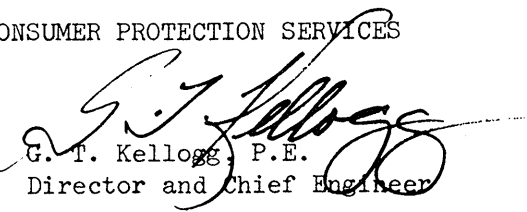
Certain areas of concern to this department which we feel should be included in the plan will be public and semi-public water supplies, sewage and solid waste disposal, vector control, recreational sanitation, and eating establishment sanitation.

This department will be available at any time to coordinate our requirements with the development and management planners.

If we can be of service, please contact us.

Yours truly,

BUREAU OF CONSUMER PROTECTION SERVICES


G. T. Kellogg, P.E.
Director and Chief Engineer

GTK:TAS:cvh



DONALD V. ALLEN
DIRECTOR OF COMMERCE

NORMAN F. WILLIAMS
STATE GEOLOGIST

501-371-1488

Arkansas GEOLOGICAL COMMISSION
VARDELLE PARHAM GEOLOGY CENTER • 3815 WEST ROOSEVELT ROAD • LITTLE ROCK, ARKANSAS 72204

February 5, 1974

Miss Karen Cooke
C.T.S.
11th & Broadway
Little Rock, Arkansas 72202

Dear Miss Cooke:

I asked Charles Stone of our staff, who is familiar with the area, to write a paragraph on the basic geology and physiography of Nimrod and Blue Mountain lakes, which follows:

Basic Geology and Physiography of
Nimrod Lake, Arkansas

Nimrod Lake is situated in the extreme northern portion of the structurally complex Frontal Ouachita Mountain subprovince on the east-west flowing Fourche la Pave River. The Lake is near the axis of the large east-west trending Fourche syncline which is complicated by an ancient north moving thrust fault, disrupting, tilting and causing minor folding of the strata. The bedrock beneath the lake is composed primarily of valley forming shale and sandstone of the middle Atoka Formation of Pennsylvanian Age. Lower Atoka sandstone and siltstone with some shale dominate the more mountainous flanks of anticlines both north and south of the Lake. Dickite and quartz crystals occur along some joint systems.

Basic Geology and Physiography of
Blue Mountain Lake, Arkansas

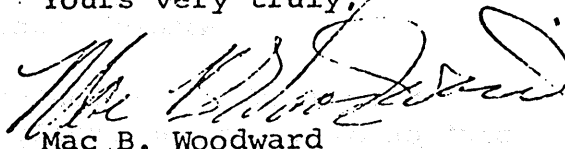
Blue Mountain Lake is situated in the southern portion of the Arkansas Valley Province on the east-west flowing Petit Jean River. The Lake is near the

February 5, 1974

center of the large east-west trending Ranger Anticline with strata dipping steeply both to the north and to the south, complicated by several ancient thrust faults generally moving north. The bedrock beneath the Lake is composed of alternating thin shales (forming the valleys) and sandstones (forming the ridges) of the Atoka Formation of Early Pennsylvanian Age. Younger, moderately inclined, thin sandstones form the ridge and valley topography on the flanks of the anticline adjacent to the Lake, while the gently dipping younger Pennsylvanian Hartshorne Sandstone, McAlester Shale, Savanna Sandstone form the Poteau Mountain and Magazine Mountain to the north. Some dickite and quartz crystals occur along joint and fault systems in the Lake area.

I hope this will be of value to you and if we may be of further service please call on us.

Yours very truly,



Mac B. Woodward

MBW/mf



ARKANSAS DEPARTMENT OF PARKS & TOURISM

149 State Capitol

Little Rock, Arkansas 72201

Telephone (501) 371-1511

Dale Bumpers
Governor

William E. Henderson
Director

April 16, 1973

L. E. Surles
Director of State Parks

Lou Oberste
Travel Director

Mr. Calvin Shelton
Acting Chief, Engineering Division
U. S. Corps of Engineers
Federal Building
Little Rock, Arkansas 72201

Dear Mr. Shelton:

In response to your letter of April 3, 1973 concerning updating of Masterplans for Nimrod, Blue Mountain and Bull Shoals Lakes the following information is supplied to you for your use.

The enclosed map has radii of 50 and 100 miles from the Nimrod and Blue Mountain Lakes and radii of 50, 100, and 200 miles from Bull Shoals Lake.

The information is on recreational developments administered by the State Parks that are similar in nature to those areas administered by the Corps.

A. Nimrod and Blue Mountain Lakes

Recreation:

The Arkansas State Parks has no plans for development of recreational facilities on these lakes.

State Park developments in other areas are as follows:

1. 50 mile radius
 - a. Lake Dardanelle renovation 1975
 - b. Lake Ouachita renovation & expansion 1974
 - c. Lake Catherine renovation & expansion complete
2. 100 mile radius
 - a. Daisey renovation 1973
 - b. DeGray new development 1974-75
 - c. Millwood new development 1975

Interpretation:

The State Parks does not have specific information on scenic, biological or historical aspects of these two lakes. Due to limited manpower within the interpretive division we are not able to offer much assistance in obtaining this information, however we would strongly suggest

Mr. Calvin Shelton

Page 2

April 16, 1973

such activities by the Corps in these areas. Well managed and presented naturalist activities enhance the visitors stay and provide the visitor with a high regard for the park and the agency.

B. Bull Shoals Lake

Recreation:

The Bull Shoals State Park located adjacent to the dam on the south side will undergo basic renovation in 1973.

Other state park developments within a 200 mile radius are as follows:

1. 50 mile radius
 - a. Ozark Folk Center Non-water oriented 1973
2. 100 mile radius
 - a. Lake Charles SCS Lake renovation 1975
 - b. Lake Dardanelle renovation 1975
3. 200 mile radius
 - a. DeGray new development 1974-75
 - b. Milwood new development 1975
 - c. Lake Ouachita renovation & expansion 1974
 - d. Daisey renovation 1973
 - e. Lake Catherine renovation & expansion complete

Interpretation:

Beginning July 11, 1973 there will be an interpretive program at Bull Shoals State Park. Enclosed is a draft copy of the chapter on interpretation from the Bull Shoals Masterplan of the Arkansas State Parks. Our plan is not yet complete but should be available soon.

All other State Parks have been located for your convenience. I hope this information has been of some value to you. If we can be of any further assistance please notify us, we will be happy to cooperate any way we can.

Sincerely,


Bill Thompson, Chief
Planning & Design

BT:lj

Enc:

TOM PUGH
CHAIRMAN
PORTLAND

LLOYD McCOLLUM
VICE CHAIRMAN
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JOE D. SCOTT
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DR. RALPH H. BOWERS
HARRISON

DR. P. M. JOHNSTON
FAYETTEVILLE



Arkansas

Game and Fish Commission

LITTLE ROCK, ARKANSAS 72201

April 20, 1973



Mr. Calvin W. Shelton, Acting Chief
Engineering Division
U. S. Army Corps of Engineers
P.O. Box 867
Little Rock, Arkansas 72203

Dear Mr. Shelton:

Receipt is acknowledged of your correspondence of April 4, 1973 as concerns Master Plans for Development and Management of Nimrod, Blue Mountain and Bull Shoals Lakes. You have requested that we furnish information pertinent to management and utilization of game and fisheries resources on these projects as well as suggestions for future use and development.

As you know, coordination between the Corps of Engineers and this Commission has greatly enhanced the fisheries resource potential and related recreational opportunities afforded the public on Blue Mountain Lake. In this respect, we are enclosing for your information and reference, two publications which were prepared by our fisheries biologists in connection with these cooperative management efforts. Also, conducive to optimum production potentials of fisheries resources is the recent manipulation of the water level of Bull Shoals Lake and an ensuing administrative report to the Commission on this activity is also enclosed.

At the present time, our most pressing need, insofar as the fisheries resources of Bull Shoals Lake is concerned, centers around our proposal to rear caged cultures of trout and

Calvin W. Shelton

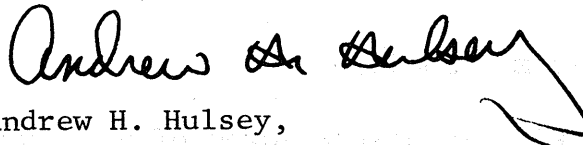
- 2 -

April 20, 1973

catfish in Bull Shoals Lake. Our ability to fulfill management objectives in this respect, of course, is contingent upon the resolution of discordancies between our agency and the Corps of Engineers. Without belaboring the finer points of our position on this matter, I think it will suffice to say that caged culture of trout and catfish, once initiated on Corps of Engineers' reservoirs in Arkansas, will make a terrific contribution to the overall sport fishing potential of the state.

We appreciate the opportunity to comment on your Master Plans for these projects.

Yours very truly,



Andrew H. Hulsey,
Director

AHH:RWB:ac

Enc.

SECTION VI

GENERAL DEVELOPMENT PROGRAM

6-01. General Description of the Plan. The plan presented herein reflects the general use of intensive recreational development of the land and water areas within the Blue Mountain Lake area. The plan is not intended to be rigid, but rather it should be subject to modification to suit changing conditions and demands. The development plan consists of construction and/or improvement of existing access roads to the lakeshore, construction or expansion of recreational facilities to the extent necessary to take care of tourist visitation, and the proper maintenance and management of the lake area.

6-02. Basis of Selecting Areas. Factors considered in the selection of the parks are adaptability of the site to the requirements of desired facilities, accessibility of the site by way of existing or proposed roads and highways, scenic quality of the area, availability of sheltered coves, proximity to other sites, terrain and water depth, and other pertinent data. These areas as well as all other allocated land are shown on the land use plan. Plates 3 through 5.

SECTION VII

LAND USE PLAN

7-01. Allocation of Project Lands and Waters. A total of 17,018 acres was acquired for the project. A plan for the allocation of project lands and water was formulated in accordance with ER 1120-2-400, Change 1, dated 1 October 1972. (See Plates 3 through 5). These categories are defined and their application discussed as follows:

a. Project Operations. There are 3,350 acres which lie below the top of the conservation pool at elevation 387 and are subject to almost constant inundation. In addition to this land, 108 acres have been reserved exclusively for Administrative purposes creating a total of 3,458 acres allocated for project operations.

b. Operations:Recreation-Intensive Use. This allocation includes all lands to be used for development of parks for intensive recreational activities. Development may include concession and quasi-public facilities. Because a great portion of the lands surrounding the lake are lower than the top of flood control pool, they are subject to flooding during periods of high water. These portions of the recreation-intensive use lands will have a dual allocation of Project Operations below flood control pool elevation 419. Facilities proposed on these lands are those which will receive minimum damage from flooding. The lands above elevation 419 are subject to infrequent flooding, and are often a considerable distance from the water's edge. Facilities which would be damaged by flooding, such as water wells, restrooms, and picnic shelters, are sited above elevation 419. Lands allocated for recreation-intensive use may be used for agricultural purposes on an interim basis only. This allocation is included in five existing parks and one future park. See Plates 6 through 11.

c. Operations:Recreation-Low Density Use. Lands allocated in this category function as sites for low-density recreation activities and buffer zones. Buffer zones consist of: open space between intensive recreation developments, and open space between these developments and public or private land which, by virtue of its use, is incompatible with the recreation development and would detract from the quality of public use. Some examples of low density use are: ecological workshops, trails, primitive camping, etc. No agricultural uses are permitted except on an interim basis.

The lands in this category lying below elevation 419 will have a dual allocation of Project Operations because they are subject to occasional flooding. See Plates 3 through 5.

d. Operations: Natural Area. Natural areas include lands allocated for preservation of scientific, ecological, historical, archaeological, and visual values; lands managed to protect rare and endangered species

of flora and fauna; and narrow bands of project land between the conservation pool and the project boundary. Natural areas may be entirely undeveloped or may contain limited development such as trails. No trail terminals may be located on lands allocated as natural areas. No agricultural uses are permitted. See Plates 3 through 5.

e. Interim use. Lands allocated for purposes other than natural areas are used for agricultural purposes on an interim basis only. Of the 17,018 acres acquired for all project purposes 11,463 have been made available and have been leased for the agricultural leasing program.

SECTION VIII

PLAN OF DEVELOPMENT

8-01. General. Blue Mountain Lake was constructed for flood control. The flat-water recreation potential created by the dam constitutes a second resource. The objectives and policies governing the development of the recreation resource must not conflict with the regulation of the lake for the purpose for which it was authorized.

a. Development to date has been planned for public use and benefit with prime consideration being given to maintenance of the highest standards of public health and safety.

b. Leases for commercial enterprises on Government-owned land around the lake are granted in a fair and impartial manner. The prices charged for facilities and services provided by concessionaires are subject to approval.

c. The interest of the general public is paramount, and the interest is safeguarded by adequate control over the use of Government-owned land adjacent to the lakeshore. The lakeshore is being retained in its present natural state insofar as is consistent with making ample facilities available to the public. Ownership of land adjacent to the Government-owned land is not considered sufficient reason to allow the owner to have private and exclusive access to the lake across Government-owned land.

d. The lakeshore is protected on a continuing basis to preserve its natural scenic beauty. The interest of the general public is safeguarded by adequate control over the use of Government-owned land in the lake area. Boat operations are regulated under rules and regulations considered necessary to prevent unsafe boating practices. The State of Arkansas has enacted a State Boating Act governing boat operation and registration. Enforcement of the provisions of this act is a responsibility of State and local law enforcement personnel.

e. The advice, assistance, and cooperation of various Federal, State and local governmental agencies, which are familiar with recreational programs and the management of public water and land areas, are sought periodically to the fullest extent practicable in the development, maintenance, and management of the project.

f. Decisions concerning the need for waterborne toilets will be based on criteria and guidance furnished by EM 1110-2-400, dated 1 September 1971.

g. The facilities for water supply and sanitation will be coordinated with the appropriate State agencies as to the general type and location. The design and operation will meet the appropriate standards required by Federal and State laws.

h. Traffic control will be provided at problem points where vehicles are deviating from existing roadways and parking areas. Such controls may consist of abrupt changes in grade, planting of shrubbery, placement of boulders or delineator posts, by ditching, or other appropriate means. This will eliminate the present practice of indiscriminate off-road movement of vehicles, and will allow establishment of vegetative ground cover.

8-02. Existing Recreation Areas Receiving Additional Improvements. Visitation for 1980 is projected to increase by 47% over the 1970 visitation figure. The addition of the facilities required for this increased visitation will be accomplished by the expansion of five existing recreation areas and the development of one new recreation area, subject to the cost sharing policy as stated in paragraph 1-03 b. The existing parks are described as follows:

a. Outlet Area Park. This park, containing about 272 acres, is situated along both banks of the discharge channel, which is the old channel of Petit Jean River downstream from the dam. This channel accommodates the release of impounded waters from the lake. The area is not affected by the conservation and flood control elevations of the lake. Existing recreational facilities are located immediately downstream from the discharge end of the outlet tunnel. On the right bank are a vault type restroom, 11 camping sites, a drinking water well, and a trailer sanitary disposal station. Four additional camping sites with electrical outlets are proposed. On the left bank there are 10 camping sites, a vault type restroom, and a drinking water well. The facilities along the outlet channel were provided to satisfy the demands of fishermen who desired to fish the tailwaters below the dam. Also, there has been an increasing demand by the visiting public for day use facilities. Shallow waters here do not permit a boat launching ramp. Access is by way of a paved road from the office of the facilities maintenance superintendent extending along the base of the dam to the foot of the mountain at the right abutment of the dam, where the road forks. One road leads around the foot of the mountain to the left bank of the outlet channel. The other road extends across the crest of the mountain past the overlook structure and descends the west slope of the mountain to the right bank. The circulation roads in the developed park areas are gravel surfaced. Additional facilities proposed on the right bank include paving existing gravel road and adding paved turnouts at camping sites, electrical outlets for the 11 existing camping sites; a drinking water well, a vault type restroom and 4 camping sites are proposed about 1,600 feet downstream from the existing camping sites. In the camping area on the left bank the existing gravel road, turnouts and parking area will be paved, and electrical outlets for 10 existing camp sites will be provided. About 3,500 feet downstream from the outlet channel, a picnic area containing 28 sites is proposed. The terrain is gently rolling and tree cover is moderately sparse. The area is well separated from the camping area. A group picnic shelter, a vault restroom, and a drinking water well are proposed. A visitor control area is proposed on the main access road about 800 feet downstream from the dam. An interpretive trail about 1,500 feet long is proposed from the overlook structure to the visitor control center. See Plates 6 and 6a.

b. Waveland Park. Waveland is the major development area on Blue Mountain Lake and accounts for 30% of the Visitor Use for the entire project. It is located one-half mile west of the north end of the dam and two miles from Highway 10 by paved road. The area is on a well-wooded ridge that slopes gently to the water's edge. Tree cover is a pine-oak variety and is moderately heavy. Most of the existing shoreline is exposed to open water and extensive wave action. There are 296 acres between elevation 387 and 419, and 368 acres above elevation 419. Waveland presently contains the largest portion of recreational facilities for the entire lake. There are several reasons for concentrating facilities within the park, but the two most important reasons are the site's terrain and its excellent accessibility by paved road. Existing facilities include camping and picnicking sites, a natural sand swimming beach bordered by an attractive growth of cypress trees, four concrete launching ramps, sanitary facilities, and potable water. Additional facilities proposed include 20 picnic sites, a picnic shelter, paved parking area at the swimming beach, paving existing gravel roads, an overflow parking area near the park entrance, and an interpretive center display. See Plates 7 and 7a.

c. Ashley Creek Park. The site is located on the north side of Blue Mountain Lake at the mouth of Ashley Creek, two miles south of Highway 10. Access is by gravel road, which runs from the town of Blue Mountain and roughly parallels the creek. Ashley Creek Park accounts for 10% of the visitor use for the entire project. The developed site occupies a relatively small area constricted by moderately steep slopes, having 28 acres between elevations 387 and 419, and 60 acres above elevation 419. Tree cover is predominantly pine. Existing facilities include 10 camp sites to be converted to picnic sites, a picnic shelter, concrete launching ramp, sanitary facilities, and potable water. Additional facilities proposed include 20 camp sites (vehicular), 10 camp sites (walk-in) on a gently sloping ridge, restroom, and potable water. This park will be designated as a free park, where no fee will be charged for overnight use. See Plates 8 and 8a.

d. Hise Hill Park. This park is located 1.8 miles east of the Sugar Grove Community on the south side of the lake. Access is by way of 7.5 miles of gravel road from the town of Magazine, and 11.6 miles of gravel surfaced State Highway 217 from Booneville. State Highway 217 is being prepared for bituminous surfacing. This park usually receives about 10% of the total project visitation. This is expected to show a considerable increase when the highway from Booneville is paved. The major portion of this park is open pasture and, when developed, will require reforestation. Within the park there is an area of about two acres of land which remains in private ownership. Also, there is an agricultural-grazing lease of approximately two acres on which the lessee has residence privilege. The lease is subject to cancellation when the land is required for a higher purpose. In the park there are 156 acres between elevations 387 and 419, which are subject to intermittent flooding, and 164 acres above flood control elevation 419. The tree

cover, which is predominantly pine, is confined to the steeper slopes of about 25%. The nine existing camping units are located on the moderate slopes of a wooded ridge. An existing group picnic shelter is located adjacent to the camp sites. When additional camp sites are constructed the existing sites will be converted to picnic sites. Other existing facilities include a vault type restroom, boat launching ramp, and a gravel parking area. Additional facilities proposed include a paved parking area at the boat launching ramp, 31 camping sites, 18 picnicking sites, drinking water well, vault restrooms, trailer sanitary disposal station, and a visitor control complex. Due to the steep terrain adjacent to the water it will be necessary to locate future facilities removed from the water's edge. See Plates 9 and 9a.

e. Lick Creek Park. This park is located on the south side of the lake in the Lick Creek Bay embayment about 2.5 miles upstream from the dam. Access from State Highway 10 is by one mile of paved road and about four miles of gravel road, and by 8.7 miles of gravel road east from the community of Sugar Grove. The park is situated on moderate to steeply sloping terrain with good pine-hardwood tree cover. Existing facilities include a group picnic shelter, 3 picnic sites, 4 camping sites, drinking water well, a vault type restroom, and a boat launching ramp. Experience has shown the area to be a popular site for family reunion groups, probably due to the relatively remote location. It is proposed to expand this park by extending the access road across an adjacent ravine to gain access to a ridge about 1,400 feet long and 300 feet wide. The crest of the ridge has very gentle slopes and is heavily wooded, making it very well suited for camping. The proposed development will make this park well suited for overnight use by groups on a reserved basis. The side slopes of the ridge are rather steep, which prevents the camping sites having adjacent water access. Proposed facilities include 56 camping sites, 28 picnicking sites, a group picnic shelter, a pressurized potable water system with 7 drinking fountains, vault type restrooms, a trailer sanitary disposal station, and a visitor control center. The terrain provides very good separation of day use and overnight facilities. Existing camping sites will be converted to picnicking sites when the proposed facilities are constructed. A hiking trail about 2.5 miles long will extend eastward along the scenic bluffs to connect with an existing trail leading to an overlook structure above the right abutment of the dam. There are about 20 acres of land between elevations 387 and 419, and 160 acres above elevation 419. See Plates 10 and 10a.

8-03. Areas Recommended for Future Development.

a. The area known as Quarry Bluff is located on the north shore of the lake immediately east of Ashley Creek Park. Access is by about two miles of gravel road from the town of Blue Mountain on State Highway 10. The area contains the old quarry site from which stone was obtained to riprap the upstream slope of Blue Mountain Dam. A portion of the old haul road is used in the proposed park circulation roads. Minor over-land drainage erosion has divided the area into two small peninsulas and one larger peninsula, which provides ideal separation of overnight and day use. The larger peninsula provides a lesser water access and was selected for day use facilities. A boat launching ramp, parking area,

sanitary facilities, and potable water were sited on one of the smaller peninsulas. Walk-in type camping sites are proposed for the other peninsula. The three promontories provide very attractive scenic views of the lake and dam. There are about 12 acres between conservation pool elevation 387 and flood control pool elevation 419. About 240 acres lie above elevation 419. See Plates 11 and 11a.

b. Also, there are project lands which could be reallocated and made available for non-exclusive group use on a first-come first-serve reservation basis. This provision will be limited to non-profit groups or organizations of a charitable or character building nature. To obtain an outgrant of project lands for exclusive use, a group must demonstrate a unique requirement which cannot be satisfied through use of facilities available on a reservation basis, and having adequate financial and managerial capability to develop and administer the granted lands in an attractive, safe, and sanitary manner.

8-04. Interpretive program. The initial interpretive program will include development of an interpretive trail from the overlook area above the right abutment of the dam to Lick Creek. Also, a trail is proposed from the overlook area downstream to a terminus on the access road directly below the dam. (See Plate 3.). Portions of these trails will be developed as visitation warrants and funds are made available. Trees and shrubs will be identified along the trail. The possibility of identifying edible plants and fruits will be considered.

A geological narrative will be placed on a plaque at the south end of the dam. It will include facts about the formation of the rock strata which are exposed at the location as well as a general summary of the geology of the lake area. An outdoor interpretive display center will be developed at the road intersection in front of the Resident Office. It will consist of a parking area and information display boards. Directions to the nature trail and geological display as well as a brief description of each will be included at the interpretive center. Also, included at the center will be an historical narrative pertaining to the local area. About one mile of hiking trail is proposed between Ashley Creek and Quarry Bluff Parks.

8-05. Trail construction. Trails shall be constructed similar to those shown in the National Park Service "Park Practice Design" Manual, Plate No. 343 B, Index No. B-3104. Trails will be routed around desirable trees and exposed rock outcroppings, with a minimum of excavation, and will have a natural rustic appearance. The trail profiles will not exceed 5% except for short distances as necessary to avoid desirable trees and rock outcroppings. Tread width will be about 3 feet. Trails will be surfaced with loose aggregate.

SECTION IX

BENEFITS AND ECONOMIC VALUE

9.01. Benefits and Economic Value. The economic benefits derived from the project's primary purpose of flood control have been significant in terms of flood relief. The benefits derived from the utilization of recreational facilities of Blue Mountain Lake are not a great asset to the area, as compared to Greers Ferry Lake or Bull Shoals Lake. Based upon standards for the evaluation of recreational benefits contained in Supplement No. 1, Senate Document No. 97, 87th Congress, June 1964, the estimated value of an average visitor day to Blue Mountain Lake is \$0.93. Application of unit values to the annual number of activity occasions for each activity results in a gross benefit of \$377,000 in 1972. The full economic impact of Blue Mountain Lake is shown in the following table.

TABLE 9-1

Data Relating to Collateral Benefits of the Project

	<u>1946</u>	<u>1972</u>
1. Number of vacation resorts, cottages, camps, lodges, hotels, and similar accommodations where overnight facilities are provided in vicinity of lake	14	46
2. Number of overnight accommodations available in above establishments	132	432
3. Estimated value of establishments	\$93,000	\$420,000
4. Number of restaurants, cafes, and public dining rooms in vicinity of lake	12	12
5. Assessed valuation of all taxable property in counties in which lake is located:		
Yell, Arkansas		\$15,320,850
Logan, Arkansas		17,019,610
6. Number of real estate transfers in counties in which the lake is located	1,714	1,108
7. Percentage of change in value of adjoining property since 1946	100	339
8. Number and value of private recreational or home sites constructed adjacent to lake		42 \$204,000
9. Value of non-resident construction		\$55,000
10. Number of persons employed in service trades or business in vicinity of lake that are largely dependent on trade of visitors and fishermen	0	20
11. Value of fishing tackle, bait, boats, motors, and all other equipment for outdoor recreation sold annually in vicinity of lake	\$300	\$58,500
12. Value of privately owned boats, houseboats, motors, and boat trailers, regularly used on lake and not in commercial service	\$100	\$170,500
13. Value of commercial boat docks, boats, motors, and all boating facilities used for commercial purposes	\$100	\$8,500

SECTION X

ADMINISTRATION AND MANAGEMENT

10-01. Policies. The general policies with regard to Blue Mountain Lake are designed to provide for orderly and planned development for public use of the recreational resources of the project and to insure that in future years, these resources will remain substantially intact and that future needs for recreational development will be met. These policies are carried out in accordance with the general consideration for recreational development as contained in engineering regulations and manuals and the rules and regulations governing public use of certain lake areas administered by the Corps of Engineers as stated in Part 327, Title 36, Chapter 3, of the Code of Federal Regulations, which are applicable to Blue Mountain Lake, and SWDR 1130-2-7, dated 25 September 1968. The natural environmental conditions of project lands are being retained for use by the general public.

10-02. Ranger Training. Training courses and conferences for lake rangers and managers are conducted annually or more frequently when the need arises. All currently employed lake rangers who meet entrance requirements and all new employees recruited for lake ranger positions receive formal training for lake management positions.

10-03. Staffing Needs. Project staffing needs and fund requirements have been submitted for consideration in an effort to implement new program objectives with respect to the Corps of Engineers recreation environmental resources planning, development, and management responsibilities. Pending the outcome of filling current staffing needs, the present organizational arrangement for administration and management will be continued.

10-04. Administration. The administration of the recreational program at Blue Mountain Lake is carried out jointly through District Office and field personnel of the resident office. The District Office personnel are concerned mainly with determining the nature and extent of development, planning site layouts, preparing construction requirements and codes, initiating, coordinating, and reconciling activities relative to policies and regulations. Other prime considerations include relations with other agencies, management, leases, licenses, permits, and public relations. Resident office personnel are primarily concerned with the day-to-day administrative functions required at the project level.

10-05. Management. Field personnel are concerned with direct management and supervision of the recreational program. They supervise the use of lands and waters of the project, recommend changes in development based on observed public use, lend assistance in obtaining compliance with the terms of leases, concessions, and permits, protect and maintain Government property, and maintain high standards of public health and safety. The resident office is located at Nimrod and serves both the Nimrod and Blue Mountain projects. A resident engineer and a clerk serve both

projects. Those assigned directly to the Blue Mountain project include a facilities maintenance manager, park manager, park technician, dam operator, engineering equipment operator, construction-maintenance worker, and a laborer.

10-06. Monumentation. A continuing program of project boundary monumentation is in progress on Blue Mountain Lake. As of 1 February 1975 it is estimated that the perimeter of the project lands is 81 miles and 20.6 miles have been monumented as the program is 25.4 percent complete. This program will continue as funds and the workload permit.

SECTION XI

PROJECT RESOURCE MANAGEMENT

11-01. General. Management of the resources to provide recreation, wildlife and fish propagation, timber, and scenic and esthetic values is the primary consideration given to the resource base. The coordinated uses of these resources will be consistent with project purposes. A dynamic human population and an ever changing resource base requires a flexible resource management plan with an allowance for numerous revisions. The proposed future development areas will be protected and their values preserved with all interim uses consistent with intended land use. A Project Resource Management plan has been prepared as Appendix A to Design Memorandum No. 1-B.

Upon approval of this updated design memorandum, Appendix A will become a part of this updated master plan.

11-02. Staffing and Organization. The Resident Engineer and his staff, including the ranger force, will be aware of the multiple-use aspects of resource management and will make daily decisions regarding resource use. Preservation and use will be finely balanced with an awareness of all use factors.

11-03. Administrative and Maintenance. The administrative and maintenance functions will be performed by personnel under the supervision of the Resident Engineer. Maintenance of existing resources will be accomplished on a programmed systematic basis with flexibility to provide interim maintenance as required. The multiple uses of the project will be recognized and maintenance procedures will be compatible, and if possible, complimentary to other project uses. All standard safety precautions will be adhered to assuring the safety of the staff and the public.

11-04. Law Enforcement. Rangers have authority to issue citations for designated offenses; however, they do not have the authority to make arrests. A low-key law enforcement policy is in use with the visitor being controlled through facility design and non-offensive, suggestion-type signs. Where arrests are required, local, State or Federal law enforcement agencies assist. The enforcement personnel will perform their duties with little or no disruption to the surrounding visitors.

11-05. Safety. Safety of personnel and visitors alike is of primary importance to the project area. Devices and procedures which have been implemented to promote safety in the project include signs, ranger talks for visitors, information folders and news media releases, regular inspection of concession and recreation facilities, periodically scheduled employee safety meetings, and safety and first-aid demonstration. In addition, various written manuals and directives on safety are kept in the project office for reference.

11-06. Concession Activities. Concessions are provided for the public for access and convenience to enhance the recreation experience and accommodate the user. One concession boat dock facility is now being operated, providing a total of 30 rental boats. A complete evaluation of adequacy of location and safety features of this facility is contained in the project resource management plan. Additional commercial leases will be granted only after a market analysis has been made which indicates a need for additional concession facilities and that an additional concession will be economically feasible.

11-07. Visitor Interpretation and Education. The goals of the educational and interpretive facilities and programs are to inform the public of purposes and operational aspects of the project, to interpret the historical and natural features of the area, and to provide opportunities for visitor enjoyment. The methods used to accomplish these goals are: visitor information signs, marker buoys, and visitor programs. Examples of visitor programs which are available are: ranger fireside talks and self-guiding nature trails.

11-08. Resource Management. Project personnel are responsible for the supervision and management of the recreational resources of Blue Mountain Lake. They manage the use of the project lands and waters; recommend development in accordance with observed use by the public; obtain compliance with the terms of leases, concessions, and permits; protect and maintain Government property; and require high standards of public health and safety.

11-09. Facilities. Facilities, such as roads, signs, utility lines, and structures, shall be designed and located to harmonize with the surrounding landscape.

SECTION XII

FOREST MANAGEMENT

12-01. General. The forest management plan for Blue Mountain Lake has been prepared in accordance with ER 1130-2-400 dated 28 May 1971 and was approved in September 1973. The objective of the forest management plan is to establish guidelines for the orderly management of the various forest resources. The forest management plan will be supplemented by detailed compartment prescriptions developed annually on an area approximately equal to one-tenth of the total land management area. This plan was prepared as Appendix B, to Design Memorandum No. 1-B. Upon approval of this updated design memorandum, Appendix B will become a part of this updated master plan.

12-02. Objective and Policy. The objective of forest management is to protect water quality through the control of soil erosion, restore the forest to a healthy state, provide forest cover required for recreational use and development, improve wildlife and fisheries habitat, and preserve and improve scenic values. Forest lands are managed for their multiple resources. The removal of vegetation, living or dead, will be done only with sound justification, such as silvicultural needs, urgent disease and insect control, fire hazard reduction, and removal for construction of recreational facilities or specific essential uses.

12-03. Physical and Ecological Resources and Characteristics. Forest cover types have been classified according to the tree species forming the plurality of stocking. The forest cover types present are: pine, pine-hardwood, white oak, oak-gum, oak-hickory, elm-ash-cottonwood, and river birch-willow-ash. The distribution of these species is related to the occurrence of microhabitats created by variations in soils, slope, insolation, moisture, and other ecological factors. Past land uses have had a significant influence on the types and quality of tree species presently found in the project area.

12-04. Treatments and Programs. The forest management program contained in the forest management plan will be applied to a woodland area of 6,250 acres. This area has been divided into ten compartments of approximately 625 acres each which will be treated on a 10-year rotation cycle. Each year, one compartment will be inventoried and management decisions made on the treatment required. Silvicultural practices such as thinning, selective cutting, patch cutting, prescribed burning, site preparation, application of herbicides, reforestation, and other forest management practices will be performed as appropriate. Species located in the flood control pool that have been killed by enundation will be replaced by water tolerant species. In order to insure the development of lands to their optimum recreational potential, the parks will be managed intensively. While it would not be feasible to prune and fertilize trees on all forested land, the trees in a park are more valuable and, therefore, justify added care. In order to preserve the parks in as near a

natural state as possible, trees and shrubs which are indigenous to the area will be planted. No tree will be cut or planted without approval of the landscape architect, wildlife biologist or recreational resource specialist. Where possible, new parks will be thinned at least five years before the area is open to the public. This procedure will allow crown development on the remaining trees, create openings for camping, allow air circulation, create indirect mosquito control, and allow an ecological condition to develop which is favorable to recreation use before development of the area. Equipment used in the preconstruction removal of trees and the actual construction will be such as to insure preservation of the desired plant community. Vegetation management plans for park areas will be developed in cooperation with the State Forestry Agencies. Recommendations for wood products to be removed will be a function of the operations element with disposal and sales administration being performed by the real estate element.

12-05. Personnel and Fiscal Requirements. Proper implementation of the forest management plan would require the addition of the following personnel to the project staff: A forester, and two laborers. The forester (in addition to the District Forester) will be required for the Blue Mountain-Nimrod area, and will be based at the Blue Mountain-Nimrod resident office. He will spend 50 percent of his time implementing the plan at each of the two projects. Services of the District landscape architect will be utilized as required. The management plan would be carried out under the supervision of the lake manager and the district forester.

The total annual cost for implementation of the forest management plan, including salary requirements calculated on the basis of man-day estimate, including forest fire fighting, construction of fire lanes, maintenance of fire trails, forest stand improvement, reforestation, and landscape repair in parks, is estimated at \$22,000. The total annual benefit from the forest management program is estimated at \$31,300; therefore, the net annual benefit would be approximately \$9,300.

12-06. Work Plans. The lake manager will annually prepare a work program of what is to be done to implement the forest management plan and will maintain records reflecting work which has been performed, as well as timber products harvested, and the value of these products.

SECTION XIII

FIRE PROTECTION

13-01. General. The purpose of the fire protection plan is to establish policies, equipment, specific actions, and manning guides and to train personnel in the protection of woodlands from fires. The fire protection plan is being prepared in accordance with ER-1130-2-400 dated 28 May 1971 and will be submitted as Appendix C to this master plan.

13-02. Cooperative Agreements. To provide adequate fire protection for the project area, cooperative agreements have been developed to provide for mutual assistance efforts to be conducted by the cooperating parties whenever necessary. The Arkansas Forestry Commission is working with the Corps of Engineers and assistance is offered by all parties to lands under the other's jurisdiction.

13-03. Training. Appropriate personnel on the project staff are trained in fire prevention and suppression methods. This training program assures that qualified personnel will be available to detect potential fire hazards in the project, and also to assist in fire suppression in emergency situations. Proper training in fire fighting techniques and safety factors is a joint responsibility of the park manager and the district office. Ouachita National Forest personnel have agreed to include Corps personnel in their annual fire simulator training. The Arkansas Forestry Commission is also cooperating to provide training.

13-04. Equipment. All tools and equipment for use in fire prevention and suppression activities will be described in the fire protection plan with respect to quantity, type, location, condition, and adequacy.

13-05. Prevention, Presuppression and Suppression Activities. Activities of fire prevention, presuppression and suppression will be a part of the fire protection plan. Procedures will be established for the assignment of duties in each phase to various personnel.

SECTION XIV

FISH AND WILDLIFE MANAGEMENT

14-01. General. The purpose of the plan is to provide for the systematic management of the land and water areas of Blue Mountain Lake in striving for the improvement of fish and wildlife potentials. The fish and wildlife management plan will be prepared in accordance with ER 1130-2-400 dated 28 May 1971 and submitted as Appendix D to this master plan. The fish and wildlife management plan further implements Section 3 of the Fish and Wildlife Coordination Act of 1958 (PL 85-624) which provides for the use of Civil Works projects for the conservation, maintenance, and management of fish and wildlife resources and habitat. Wildlife observation, study, and photography will be considered on an equal basis with hunting and fishing activities. Fish and wildlife resources are considered a valuable asset to the recreationist and will be developed and managed to insure the continuation of these resources.

14-02. Aquatic.

a. Management programs for aquatic fauna are aimed primarily at providing game fish which are desirable for recreational fishing. These game fish include striped bass, sun fishes, blue catfish, largemouth bass, and white bass. The fish and wildlife management plan will contain detailed descriptions of the fish propagation, stocking, and research programs to be conducted in the Blue Mountain project.

b. The principal agency responsible for conducting fish management programs is the Arkansas Game and Fish Commission. The programs are coordinated with the Corps of Engineers which cooperates in management efforts as required.

14-03. Terrestrial. Terrestrial improvement provides many recreational areas for hikers, naturalists, and other outdoor sportsmen. The areas will also provide outdoor classroom situations and research areas in addition to areas for the photographer. Open areas will be kept open to provide nesting for quail and turkery. Management programs for terrestrial fauna are presently being conducted by the Arkansas Game and Fish Commission, and the Corps of Engineers. In general terms, the programs consist essentially of habitat improvement, provision of wildlife foods, and stocking of a few species. The principal focus of the Corps program is in forest management for wildlife and administration of the Agricultural and Grazing program for wildlife enhancement.

SECTION XV

PROJECT SAFETY

15-01. General. The project safety plan identifies the common recurring hazards in each major area of project operations. The plan describes precautionary actions to be taken to prevent or control hazardous situations. Areas considered in the plan includes construction, maintenance, park facilities, visitor protection, equipment operation, and office operations. A project safety plan, prepared in accordance with ER 1130-2-400 dated 28 May 1971, has been completed and was approved March 1973, as Appendix E of Design Memorandum No. 1-B. Upon approval of this updated design memorandum, Appendix E will become a part of this updated master plan.

15-02. General Program Guidelines. Program guidelines have been established for the major phases and areas of project operation at Blue Mountain Lake. These include guidelines pertaining to administration facilities, structures, sanitation, access, park facilities, and public information procedures.

15-03. General Public. Common recurrent hazards and unsafe conditions have been identified and procedures implemented to protect the public and to take measures which will minimize or eliminate the possibility of personal injury. These procedures include not only the provision of equipment such as handrails for steps and ramps, adequate lighting for sanitary facilities, and warning signs, but also frequent inspection and maintenance of public facilities and the implementation of a continuing program of pollution and disease vector control. Numerous methods are employed to educate the public concerning possible safety hazards, and rules and regulations have been established for visitor protection.

15-04. Employee. It is the policy of the Corps of Engineers that no employee shall be required to work in surrounding or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety. Accordingly, appropriate sanitation procedures and safety precautions have been implemented and an equipment monitoring system instituted in compliance with Corps safety regulations.

SECTION XVI

COST ESTIMATE

16-01. Summary of Estimated Costs. A summary of estimated cost for additional development by parks is shown in Table 16-1. A summary of estimated cost for the additional development by facilities planned is shown in Table 16-2. A detailed cost estimate for additional recreational facilities in each park is shown in Table 16-3.

16-02. Cost-Sharing Policy. In accordance with current cost-sharing policy established by the Secretary of the Army, in coordination with the Office of Management and Budget, further development of all parks will require participation by a non-Federal public body furnishing at least 50 percent of the cost of recreational development and providing for operation and maintenance upon completion of development, unless a system of user fees is established to recover all operation, maintenance and replacement costs. All recreational development is subject to this policy since FY 1974.

16-03. Facility Costs. Cost estimates of public use facilities used in the following tables are based on current price levels and experienced costs of similar facilities.

TABLE 16-1

SUMMARY OF ESTIMATED COST FOR ADDITIONAL RECREATIONAL

FACILITIES BY PARKS

BLUE MOUNTAIN LAKE

Account	:	:	:
No.	:	Area	Cost
:	:	:	:
:	:	Outlet Area Park	\$ 134,000
:	:	Waveland Park	186,000
:	:	Quarry Bluff Park	189,200
:	:	Ashley Creek Park	138,200
:	:	Hise Hill Park	248,400
:	:	Lick Creek Park	372,500
:	:	:	:
:	:	Total Direct Cost	1,268,300
:	:	:	:
:	:	Engineering & Design (10%)	126,830
:	:	:	:
:	:	Supervision & Administration (6%)	76,098
:	:	:	:
:	:	Total	1,471,228
:	:	:	:
:	:	:	:

TABLE 16-2

SUMMARY DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

BLUE MOUNTAIN LAKE

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities Quantity	Facilities Cost
Roads					
a. 18 feet wide (2 way)					
(1) Gravel	L.F.	\$ 12.75	11,150	459	\$ 5,850
(2) Flexible pavement	do		26,050		
(a) New construction	do	19.00		14,032	266,600
(b) Existing gravel	do	3.50		2,828	9,900
(c) Existing gravel removed	do	2.00		2,625	5,250
(d) Existing pavement-removed	do	4.80		396	1,900
b. 12 feet wide (1-way)					
(1) Gravel	L.F.	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		4,659	55,900
(b) Existing gravel	do	2.50		1,520	3,800
(c) Existing gravel removed	do	1.90		895	1,700
Parking Areas					
a. Gravel	S.Y.	5.00		1,600	8,000
b. Flexible pavement	do				
(1) New construction	do	8.00		16,306	130,450
(2) Existing gravel	do	2.25			
Launching Lanes, Concrete	Ea	30,000.00	7	1	30,000
Camping Spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		175	87,500
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000.00			
b. Hiking	do	3,000.00	1.34	4.07	12,200
c. Interpretive	do	10,000.00		0.3	3,000
d. Motorcycle	do	1,200.00			
e. Benches	Ea	300.00		4	1,200

TABLE 16-2 (Cont'd)

SUMMARY

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Quantity	Facilities Cost
<u>Trails (Cont'd)</u>					
f. Footbridges	do	\$ 1,500.00		1	\$ 1,500
<u>Park Gates</u>					
	Ea	500.00	1	5	2,500
<u>Picnic Units</u>	Ea	525.00	10	103	54,000
<u>Camp Units</u>					
a. Basic (including walk-in)	Ea	650.00	84	142	92,300
b. Add shelter	do	250.00		20	5,000
c. Add electrical	do	200.00		75	15,000
<u>Table Canopies</u>	Ea	250.00	20		
<u>Picnic Shelters</u>	Ea	12,100.00	5	3	36,300
<u>Mercury Vapor Lights</u>	Ea	500.00		5	2,500
<u>Changehouses</u>	Ea	8,500.00	1	2	17,000
<u>Swimming Beaches</u>	Ea	6,000.00	1	2*	10,000
<u>Picnic Spurs</u>					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		5	2,500
(2) Existing gravel	do				
<u>Amphitheaters</u>	Ea	750.00		2	1,500
<u>Entrance Complex</u>	Ea	15,000.00		4	60,000
<u>Trailer Sanitary Station</u>	Ea	4,400.00	3	2	8,800
<u>Drinking Fountains</u>	Ea.	1,500.00		19	28,500
<u>Toilets</u>					
a. Masonry					
(1) Vault	Ea	20,000.00	9	11	220,000
(2) Waterborne	do	32,000.00			
(3) Waterborne with showers	do	34,000.00			
(4) Convert to waterborne	do				

TABLE 16-2 (Cont'd)

SUMMARY

Item	Unit	Unit Cost	Existing Facilities: FY 1975 Quantity	Proposed Facilities: Quantity	Facilities Cost
<u>Toilets (Cont'd)</u>					
b. Wooden, vault	do	12,000.00			
<u>Water System</u>					
a. Water line, 3/4" PVC	L.F.	1.75		3,143	\$ 5,500
b. Water line, 1" PVC	L.F.	2.50		2,860	7,150
c. Water line, 1½" PVC	L.F.	3.25			
d. Water line, 2" PVC	L.F.	3.90			
e. Gate valves, with boxes	Job				
f. Water wells	Ea	5,000.00	8	5	25,000
g. Wellhouse and equipment	Ea	13,100.00	1	3	39,300
h. Electrical	Job	2,500.00		3	7,500
<u>Sewer System</u>					
a. Sewer lines, 4" PVC gravity	L.P.	7.50			
b. Sewer lines, 6" PVC gravity	do	8.00			
c. Sewer lines, 4" PVC force main	do	5.00			
d. Outfall lines, 4" PVC gravity	do	7.50			
e. Outfall lines, 4" C.J. in lake	do	10.00			
f. Manholes	Ea	400.00			
g. Treatment plant tertiary	Ea				
h. Lift Station	Ea	16,000.00			
i. Electrical	Job				
<u>Fence</u>	L.P.	4.00		800	3,200
Total					\$1,268,300

* Expansion of existing beach at Waveland Park \$4,000.

TABLE 16-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

BLUE MOUNTAIN LAKE

OUTLET AREA PARK

Item	Unit	Unit Cost	Existing	Proposed	Facilities
			FY 1975 Quantity	Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	L.F.	\$ 12.75	4,500		
(2) Flexible pavement	do		8,800		
(a) New construction	do	19.00		1,258	\$ 23,900
(b) Existing gravel	do	3.50		657	2,300
(c) Existing gravel removed	do	2.00			
(d) Existing pavement-removed	do	4.80			
b. 12 feet wide (1-way)					
(1) Gravel	L.F.	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		200	2,400
(b) Existing gravel	do	2.50		1,200	3,000
(c) Existing gravel removed	do	1.90		895	1,700
Parking Areas					
a. Gravel	S.Y.	5.00			
b. Flexible pavement	do		645		
(1) New construction	do	8.00		1,475	11,800
(2) Existing gravel	do	2.25			
Launching Lanes, Concrete	Ea	30,000.00			
Camping Spurs					
a. Gravel	Ea				
b. Flexible pavement	do		4		
(1) New construction	do	500.00		21	10,500
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000.00			
b. Hiking	do	3,000.00	0.3		
c. Interpretive	do	10,000.00		0.3	3,000
d. Motorcycle	do	1,200.00			
e. Benches	Ea	300.00			
f. Footbridges	do	1,500.00			

TABLE 16-3 (Cont'd)

OUTLET AREA PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities Quantity	Cost
Park Gates	Ea	\$ 500.00:		1	\$ 500
Picnic Units	Ea	525.00:		28	14,700
Camp Units					
a. Basic (including walk-in)	Ea	650.00:	25	4	2,600
b. Add shelter	do	250.00:	5		
c. Add electrical	do	200.00:		25	5,000
Table Canopies	Ea	250.00:			
Picnic Shelters	Ea	12,100.00:	1	1	12,100
Mercury Vapor Lights	Ea	500.00:		1	500
Changehouses	Ea	8,500.00:			
Swimming Beaches	Ea	6,000.00:			
Picnic Spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00:			
(2) Existing gravel	do				
Amphitheaters	Ea	750.00:			
Entrance Complex	Ea	15,000.00:		1	15,000
Trailer Sanitary Station	Ea	4,400.00:	1		
Drinking Fountains	Ea	1,500.00:			
Toilets					
a. Masonry					
(1) Vault	Ea	20,000.00:	3	1	20,000
(2) Waterborne	do	32,000.00:			
(3) Waterborne with showers	do				
(4) Convert to waterborne	do				
b. Wooden, vault	do	12,000.00:			

TABLE 16-3 (Cont'd)

OUTLET AREA PARK

Item	Unit	Cost	Existing FY 1975 Quantity	Facilities: Proposed: Quantity	Facilities Cost
Water System					
a. Water line, 3/4" PVC	L.F.	\$ 1.75:			
b. Water line, 1" PVC	L.F.	2.50:			
c. Water line, 1½" PVC	L.F.	3.25:			
d. Water line, 2" PVC	L.F.	3.90:			
e. Gate valves, with boxes	Job				
f. Water wells	Ea	5,000.00:	3	1	\$ 5,000
g. Wellhouse and equipment	Ea	13,100.00:	1		
h. Electrical	Job	2,500.00:			
Sewer System					
a. Sewer lines, 4" PVC gravity	L.F.	7.50:			
b. Sewer lines, 6" PVC gravity	do	8.00:			
c. Sewer lines, 4" PVC force main	do	5.00:			
d. Outfall lines, 4" PVC gravity	do	7.50:			
e. Outfall lines, 4" C.J. in lake	do	10.00:			
f. Manholes	Ea	400.00:			
g. Treatment plant tertiary GPD	Ea				
h. Lift Station	Ea	16,000.00:			
i. Electrical	Job				
Fence	L.F.	4.00:			
Total					134,000

TABLE 16-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

BLUE MOUNTAIN LAKE

WAVELAND PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities Quantity	Facilities Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	L.F.	\$ 12.75	3,200	459	\$ 5,850
(2) Flexible pavement	do		7,200		
(a) New construction	do	19.00		1,300	24,700
(b) Existing gravel	do	3.50		1,500	5,250
(c) Existing gravel - removed	do	2.00		975	1,950
(d) Existing pavement - removed	do	4.80			
b. 12 feet wide (1-way)					
(1) Gravel	L.F.	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00			
(b) Existing gravel	do	2.50			
(c) Existing gravel - removed	do	1.90			
Parking Areas					
a. Gravel	S.Y.	5.00		1,600	8,000
b. Flexible pavement	do		644		
(1) New construction	do	8.00		3,400	27,200
(2) Existing gravel	do	2.25			
Launching Lanes, Concrete	Ea.	30,000.00	4		
Camping Spurs					
a. Gravel	Ea.				
b. Flexible pavement	do				
(1) New construction	do	500.00		47	23,500
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000.00			
b. Hiking	do	3,000.00	1.04	0.2	600

TABLE 16-3 (Cont'd)

WAVELAND PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Quantity	Facilities Cost
Trails (Cont'd)					
c. Interpretive	do	\$10,000.00:			
d. Motorcycle	do	1,200.00:			
e. Benches	Ea	150.00:			
f. Footbridges	do	1,500.00:			
Park Gates	Ea	500.00:	1		
Picnic Units	Ea	525.00:		20	\$ 10,500
Camp Units					
a. Basic (including walk-in)	Ea	650.00:	44	5	3,250
b. Add shelter	do	250.00:			
c. Add electrical	do	200.00:			
Table Canopies	Ea	250.00:	8		
Picnic Shelters	Ea	12,100.00:	1	1	12,100
Changehouses	Ea	8,500.00:	1	1	8,500
Swimming Beaches	Ea	6,000.00:	1	1*	4,000
Picnic Spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00:			
(2) Existing gravel	do				
Amphitheaters	Ea	750.00:			
Entrance Complex	Ea	15,000.00:		1	15,000
Trailer Sanitary Station	Ea	4,400.00:	1		
Drinking Fountains	Ea	1,500.00:		8	12,000
Toilets					
a. Masonry					
(1) Vault	Ea	20,000.00:	3		

TABLE 16-3 (Cont'd)

WAVELAND PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Quantity	Facilities Cost
Toilets (Cont'd)					
(2) Waterborne	do	\$ 32,000.00			
(3) Waterborne with showers	do	34,000.00			
(4) Convert to waterborne	do				
b. Wooden, vault	do	12,000.00			
Water System					
a. Water line, 3/4" PVC	L.F.	1.75		1,514	\$ 2,650
b. Water line, 1" PVC	L.F.	2.50		860	2,150
c. Water line, 1½" PVC	L.F.	3.25			
d. Water line, 2" PVC	L.F.	3.90			
e. Gate valves, with boxes	Job				
f. Water wells	Ea	5,000.00	2		
g. Wellhouse and equipment	Ea	13,100.00		1	13,100
h. Electrical	Job	2,500.00		1	2,500
Sewer System					
a. Sewer lines, 4" PVC gravity	L.F.	7.50			
b. Sewer lines, 6" PVC gravity	do	8.00			
c. Sewer lines, 4" PVC force main	do	5.00			
d. Outfall lines, 4" PVC gravity	do	7.50			
e. Outfall lines, 4" C.J. in lake	do	10.00			
f. Manholes	Ea	400.00			
g. Treatment plant Tertiary GPD	Ea				
h. Lift Station	Ea	16,000.00			
i. Electrical	Job				
Fence	L.F.	4.00		800	3,200
Total					186,000

* Expansion of existing beach \$4,000.

TABLE 16-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

BLUE MOUNTAIN LAKE

QUARRY BLUFF PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Quantity	Facilities Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	:L.F.	\$ 12.75:	800		
(2) Flexible pavement	:do				
(a) New construction	:do	19.00:		3,600	\$ 68,400
(b) Existing gravel	:do	3.50:			
(c) Existing gravel-					
removed	:do	2.00:			
(d) Existing pave-					
ment-removed	:do	4.80:			
b. 12 feet wide (1-way)					
(1) Gravel	:L.F.	8.50:			
(2) Flexible pavement	:do				
(a) New construc-					
tion	:do	12.00:			
(b) Existing gravel	:do	2.50:			
(c) Existing gravel					
removed	:do	1.90:			
Parking Areas					
a. Gravel	:S.Y.	5.00:			
b. Flexible pavement	:do				
(1) New construction	:do	8.00:		3,000	24,000
(2) Existing gravel	:do	2.25:			
Launching Lanes, Concrete	:Ea	30,000.00:		1	30,000
Camping Spurs					
a. Gravel	:Ea				
b. Flexible pavement	:do				
(1) New construction	:do	500.00:			
(2) Existing gravel	:do				
Trails					
a. Connecting	:Mile	3,000.00:			
b. Hiking	:do	3,000.00:		0.57	1,700
c. Interpretive	:do	10,000.00:			

TABLE 16-3 (Cont'd)

QUARRY BLUFF PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities Quantity	Facilities Cost
Trails (Cont'd)					
d. Motorcycle	do	\$1,200.00			
e. Benches	Ea	300.00			
f. Footbridges	do	1,500.00		1	\$ 1,500
Park Gates	Ea	500.00		1	500
Picnic Units	Ea	525.00		9	4,700
Camp Units					
a. Basic (including walk-in)	Ea	650.00		16	10,400
b. Add shelter	do	250.00			
c. Add electrical	do	200.00			
Table Canopies	Ea	250.00			
Picnic Shelters	Ea	12,100.00			
Mercury Vapor Lights	Ea	500.00		1	500
Changehouses	Ea	8,500.00			
Swimming Beaches	Ea	6,000.00			
Picnic Spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		5	2,500
(2) Existing gravel	do				
Amphitheaters	Ea	750.00			
Entrance Complex	Ea	15,000.00			
Trailer Sanitary Station	Ea	4,400.00			
Drinking Fountains	Ea	1,500.00			

TABLE 16-3 (Cont'd)

QUARRY BLUFF PARK

Item	Unit	Unit Cost	Existing	Proposed	Facilities
			FY 1975		Cost
			Quantity	Quantity	
Toilets					
a. Masonry					
(1) Vault	Ea	\$20,000.00		2	\$ 40,000
(2) Waterborne	do	32,000.00			
(3) Waterborne with showers	do	34,000.00			
(4) Convert to waterborne	do				
b. Wooden, vault	do	12,000.00			
Water System					
a. Water line, 3/4" PVC	L.F.	1.75			
b. Water line, 1" PVC	L.F.	2.50			
c. Water line, 1½" PVC	L.F.	3.25			
d. Water line, 2" PVC	L.F.	3.90			
e. Gate Valves, with boxes	Job				
f. Water wells	Ea	5,000.00		1	5,000
g. Wellhouse and equipment	Ea	13,100.00			
h. Electrical	Job	2,500.00			
Sewer System					
a. Sewer lines, 4" PVC gravity	L.F.	7.50			
b. Sewer lines, 6" PVC gravity	do	8.00			
c. Sewer lines, 4" PVC force main	do	5.00			
d. Outfall lines, 4" PVC gravity	do	7.50			
e. Outfall lines, 4" C.J. in lake	do	10.00			
f. Manholes	Ea	400.00			
g. Treatment plant tertiary	Ea				
h. Lift Station	Ea	16,000.00			
i. Electrical	Job				
Fence	L.F.	4.00			
Total					189,200

TABLE 16-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

BLUE MOUNTAIN LAKE

ASHLEY CREEK PARK

Item	Unit	Cost	Existing Facilities: FY 1975 Quantity	Proposed Facilities: Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	:L.F.	\$ 12.75			
(2) Flexible pavement	:do		5,700		
(a) New construc-	:do	19.00		2,500	\$ 47,500
tion					
(b) Existing gravel	:do	3.50			
(c) Existing gravel:	:do	2.00			
-removed					
(d) Existing pave-	:do	4.80			
ment removed					
b. 12 feet wide (1-way)					
(1) Gravel	:L.F.	8.50			
(2) Flexible pavement	:do				
(a) New construc-	:do	12.00		742	8,900
tion					
(b) Existing gravel	:do	2.50			
(c) Existing gravel:	:do	1.90			
-removed					
Parking Areas					
a. Gravel	:S.Y.	5.00			
b. Flexible pavement	:do				
(1) New construction	:do	8.00		2,806	22,450
(2) Existing gravel	:do	2.25			
Launching Lanes, Concrete	:Ea	30,000.00	1		
Camping Spurs					
a. Gravel	:Ea				
b. Flexible pavement	:do				
(1) New construction	:do	500.00		20	10,000

TABLE 16-3 (Cont'd)

ASHLEY CREEK PARK

Item	Unit	Unit Cost	Existing Facilities:		
			FY 1975 Quantity	Proposed Quantity	Facilities Cost
Trails					
a. Connecting	Mile	\$ 3,000.00:			
b. Hiking	do	3,000.00:		1.2	\$ 3,600
c. Interpretive	do	10,000.00:			
d. Motorcycle	do	1,200.00:			
e. Benches	Ea	300.00:			
f. Footbridges	do	1,500.00:			
Park Gates	Ea	500.00:		1	500
Picnic Units	Ea	525.00:			
Camp Units					
a. Basic (including walk-in)	Ea	650.00:	10	30	19,500
b. Add shelter	do	250.00:			
c. Add electrical	do	200.00:			
Table Canopies	Ea	250.00:	4		
Picnic Shelters	Ea	12,100.00:	1		
Changehouses	Ea.	8,500.00:			
Swimming Beaches	Ea.	6,000.00:			
Picnic Spurs					
a. Gravel	Ea.				
b. Flexible pavement	do				
(1) New construction	do	500.00:			
(2) Existing gravel	do				
Amphitheaters	Ea	750.00:		1	750
Entrance Complex	Ea	15,000.00:			
Trailer Sanitary Station	Ea	4,400.00:	1		
Drinking Fountains	Ea	1,500.00:			

TABLE 16-3 (Cont'd)

ASHLEY CREEK PARK

			Existing		
			Facilities		
		Unit	FY 1975	Proposed	Facilities
Item	Unit	Cost	Quantity	Quantity	Cost
Toilets					
a. Masonry					
(1) Vault	Ea	20,000.00	1	1	\$ 20,000
(2) Waterborne	do	32,000.00			
(3) Waterborne with					
showers	do	34,000.00			
(4) Convert to water-					
borne	do				
b. Wooden, vault	do	12,000.00			
Water System					
a. Water line, 3/4" PVC	L.F.	1.75			
b. Water line, 1" PVC	L.F.	2.50			
c. Water line, 1½" PVC	L.F.	3.25			
d. Water line, 2" PVC	L.F.	3.90			
e. Gate valves, with					
boxes	Job				
f. Water wells	Ea	5,000.00	1	1	5,000
g. Wellhouse and equip-					
ment	Ea	13,100.00			
h. Electrical	Job	2,500.00			
Sewer System					
a. Sewer lines, 4" PVC					
gravity	L.F.	7.50			
b. Sewer lines, 6" PVC					
gravity	do	8.00			
c. Sewer lines, 4" PVC	do	5.00			
force main					
d. Outfall lines, 4" PVC					
gravity	do	7.50			
e. Outfall lines, 4" C.J.					
in lake	do	10.00			
f. Manholes	Ea	400.00			
g. Treatment plant					
tertiary_____ GPD	Ea				
h. Lift Station	Ea	16,000.00			
i. Electrical	Job				
Fence	L.F.	4.00			
Total					138,200

TABLE 16-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

BLUE MOUNTAIN LAKE

HISE HILL PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities Quantity	Facilities Cost
<u>Roads</u>					
a. 18 feet wide (2-way)					
(1) Gravel	L.F.	\$ 12.75	2,300		
(2) Flexible pavement	do		2,950		
(a) New construction	do	19.00		2,100	\$ 39,900
(b) Existing gravel	do	3.50		371	1,300
(c) Existing gravel-removed	do	2.00		1,450	2,900
(d) Existing pavement-removed	do	4.80			
b. 12 feet wide (1-way)					
(1) Gravel	L.F.	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		1,600	19,200
(b) Existing gravel	do	2.50		320	800
(c) Existing gravel-removed	do	1.90			
<u>Parking Areas</u>					
a. Gravel	S.Y.	5.00	5,250		
b. Flexible pavement	do				
(1) New construction	do	8.00		4,606	36,850
(2) Existing gravel	do	2.25			
<u>Launching Lanes, Concrete</u>	Ea	30,000.00	1		
<u>Camping Spurs</u>					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		31	15,500
(2) Existing gravel	do				
<u>Trails</u>					
a. Connecting	Mile	3,000.00			
b. Hiking	do	3,000.00		0.8	2,400
c. Interpretive	do	10,000.00			
d. Motorcycle	do	1,200.00			
e. Benches	Ea	300.00			
f. Footbridges	do	1,500.00			

TABLE 16-3 (Cont'd)

HISE HILL PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Quantity	Facilities Cost
<u>Park Gates</u>	Ea	\$ 500.00		1	\$ 500
<u>Picnic Units</u>	Ea	525.00	7	18	9,500
<u>Camp Units</u>					
a. Basic (including walk-in)	Ea	650.00	2	31	20,150
b. Add shelter	do	250.00		20	5,000
c. Add electrical	do	200.00		16	3,200
<u>Table Canopies</u>	Ea	250.00	3		
<u>Picnic Shelters</u>	Ea	12,100.00	1		
<u>Mercury Vapor Lights</u>	Ea	500.00		2	1,000
<u>Changehouses</u>	Ea	8,500.00			
<u>Swimming Beaches</u>	Ea	6,000.00			
<u>Picnic Spurs</u>					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00			
(2) Existing gravel	do				
<u>Amphitheaters</u>	Ea	750.00			
<u>Entrance Complex</u>	Ea	15,000.00		1	15,000
<u>Trailer Sanitary Station</u>	Ea	4,400.00		1	4,400
<u>Drinking Fountains</u>	Ea	1,500.00		4	6,000
<u>Toilets</u>					
a. Masonry					
(1) Vault	Ea	20,000.00	1	2	40,000
(2) Waterborne	do	32,000.00			
(3) Waterborne with showers	do	34,000.00			
(4) Convert to waterborne	do				
b. Wooden, vault	do	12,000.00			

TABLE 16-3 (Cont'd)

HISE HILL PARK

				Existing		
				Facilities:		
		Unit		FY 1975	Proposed	Facilities
Item	Unit	Cost		Quantity	Quantity:	Cost
<u>Water System</u>						
a. Water line, 3/4" PVC	L.F.	\$ 1.75:			1,200:	\$ 2,100
b. Water line, 1" PVC	L.F.	2.50:			840:	2,100
c. Water line, 1½" PVC	L.F.	3.25:				
d. Water line, 2" PVC	L.F.	3.90:				
e. Gate valves, with boxes	Job					
f. Water wells	Ea	5,000.00:	1		1:	5,000
g. Wellhouse and equipment	Ea	13,100.00:			1:	13,100
h. Electrical	Job	2,500.00:			1:	2,500
<u>Sewer System</u>						
a. Sewer Lines, 4" PVC gravity	L.F.	7.50:				
b. Sewer Lines, 6" PVC gravity	do	8.00:				
c. Sewer lines, 4" PVC force main	do	5.00:				
d. Outfall lines, 4" PVC gravity	do	7.50:				
e. Outfall lines, 4"C.J. in lake	do	10.00:				
f. Manholes	Ea	400.00:				
g. Treatment plant tertiary	GPD: Ea					
h. Lift Station	Ea	16,000.00:				
i. Electrical	Job					
<u>Fence</u>	L.F.	4.00:				
Total						248,400

TABLE 16-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

BLUE MOUNTAIN LAKE

Lick Creek Park

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities Quantity	Facilities Cost
<u>Roads</u>					
a. 18 feet wide (2-way)					
(1) Gravel	L.F.	\$ 12.75	1,150		
(2) Flexible pavement	do		1,400		
(a) New construction	do	19.00		3,274	\$ 62,200
(b) Existing gravel	do	3.50		300	1,050
(c) Existing gravel-removed	do	2.00		200	400
(d) Existing pavement-removed	do	4.80		396	1,900
b. 12 feet wide (1-way)					
(1) Gravel	LF	8.50			
(2) Flexible pavement	do				
(a) New construction	do	11.00		2,117	25,400
(b) Existing gravel	do	2.50			
(c) Existing gravel-removed	do	1.90			
<u>Parking Areas</u>					
a. Gravel	S.Y.	5.00			
b. Flexible pavement	do		665		
(1) New construction	do	8.00		1,019	8,150
(2) Existing gravel	do	2.25			
<u>Launching Lanes, Concrete</u>	Ea	30,000.00	1		
<u>Camping Spurs</u>					
a. Gravel	Ea				
b. Flexible pavement	do		4		
(1) New construction	do	500.00		56	28,000
(2) Existing gravel	do				
<u>Trails</u>					
a. Connecting	Mile	3,000.00			
b. Hiking	do	3,000.00		1.3	3,900
c. Interpretive	do	10,000.00			
d. Motorcycle	do	1,200.00			
e. Benches	Ea	300.00		4	1,200
f. Footbridges	do	1,500.00			

TABLE 16-3 (Cont'd)

Lick Creek Park

Item	Unit	Unit Cost	Existing Facilities: FY 1975			Proposed Facilities	
			Quantity	Quantity	Cost	Quantity	Cost
<u>Park Gates</u>	Ea	\$ 500.00		1	\$ 500		
<u>Picnic Units</u>	Ea	525.00	3	28	14,700		
<u>Camp Units</u>							
a. Basic (including walk-in)	Ea	625.00	7	56	36,400		
b. Add shelter	do	250.00					
c. Add electrical	do	200.00		34	6,800		
<u>Group Camp Space</u>	do	400.00		1	400		
<u>Table Canopies</u>	Ea	250.00					
<u>Picnic Shelters</u>	Ea	12,100.00	1	1	12,100		
<u>Mercury Vapor Lights</u>	Ea	500.00		1	500		
<u>Changehouses</u>	Ea	8,500.00		1	8,500		
<u>Swimming Beaches</u>	Ea	6,000.00		1	6,000		
<u>Picnic Spurs</u>							
a. Gravel	Ea						
b. Flexible pavement	do						
(1) New construction	do	500.00					
(2) Existing gravel	do						
<u>Amphitheaters</u>	Ea	750.00		1	750		
<u>Entrance Complex</u>	Ea	15,000.00		1	15,000		
<u>Trailer Sanitary Station</u>	Ea	4,400.00		1	4,400		
<u>Drinking Fountains</u>	Ea	1,500.00		7	10,500		
<u>Toilets</u>							
a. Masonry							
(1) Vault	Ea	20,000.00	1	5	100,000		
(2) Waterborne	do	32,000.00					

TABLE 16-3 (Cont'd)

Lick Creek Park

Item	Unit	Unit Cost	Existing Facilities			Proposed Facilities	
			FY 1975	Quantity	Quantity	Cost	Cost
<u>Toilets (Cont'd)</u>							
(3) Waterborne with showers	do	\$34,000.00					
(4) Convert to waterborne	do						
b. Wooden, vault	do	12,000.00					
<u>Water System</u>							
a. Water line, 3/4" PVC	L.F.	1.75			429	\$ 750	
b. Water line, 1" PVC	L.F.	2.50			1,160		2,900
c. Water line, 1½" PVC	L.F.	3.25					
d. Water line, 2" PVC	L.F.	3.90					
e. Gate valves, with boxes	Job						
f. Water wells	Ea	5,000.00	1		1		5,000
g. Wellhouse and equipment	Ea	13,100.00			1		13,100
h. Electrical	Job	2,500.00			1		2,500
<u>Sewer System</u>							
a. Sewer lines, 4" PVC gravity	L.F.	7.50					
b. Sewer lines, 6" PVC gravity	do	8.00					
c. Sewer lines, 4" PVC force main	do	5.00					
d. Outfall lines, 4" PVC gravity	do	7.50					
e. Outfall lines, 4" C.J. in lake	do	10.00					
f. Manholes	Ea	400.00					
g. Treatment plant tertiary	Ea						
h. Lift Station	Ea	16,000.00					
i. Electrical	Job						
<u>Fence</u>	L.F.	4.00					
Total							372,500

SECTION XVII

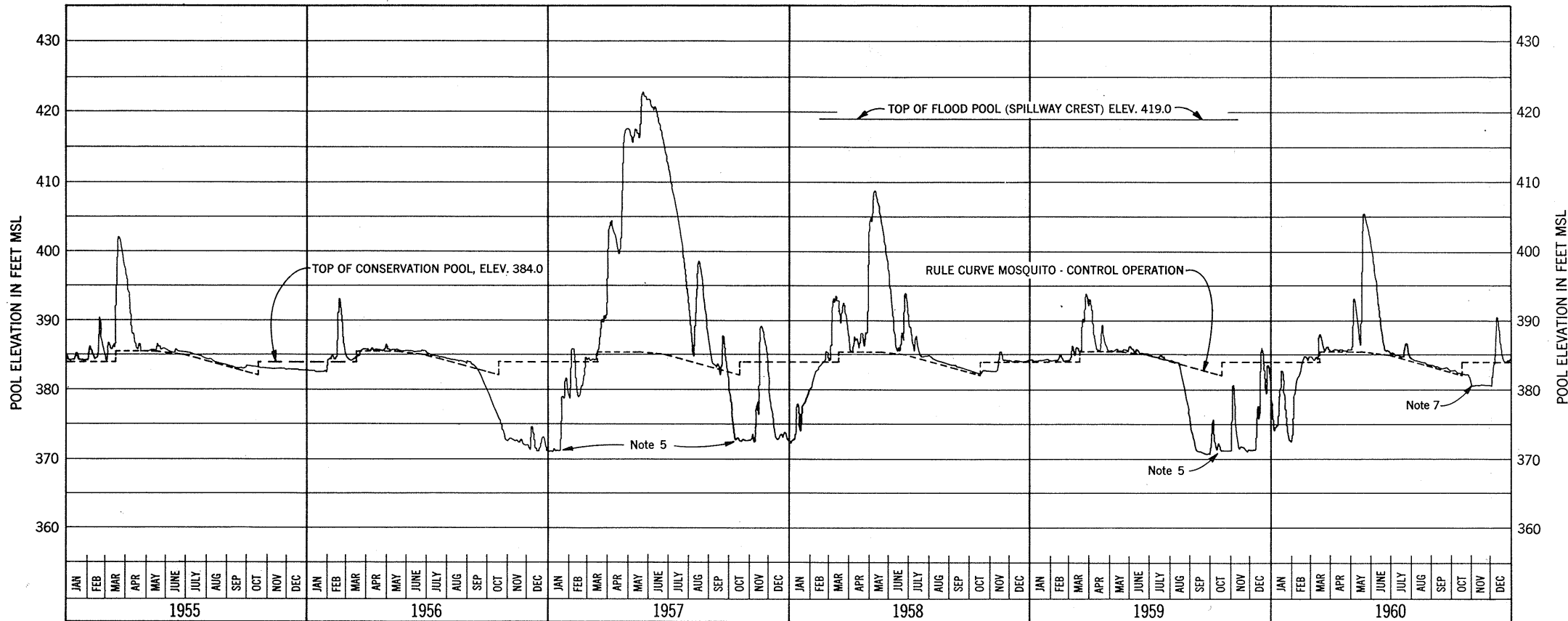
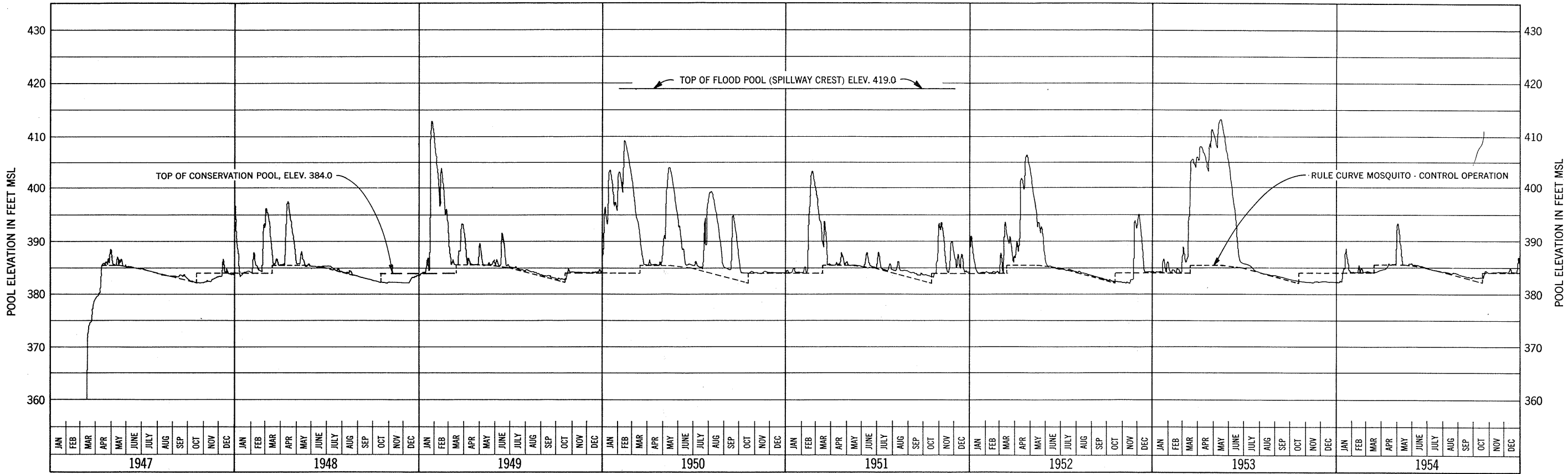
CONCLUSIONS AND RECOMMENDATIONS

17-01. Conclusions.

a. The Blue Mountain Lake Project should be developed in accordance with this master plan. Its utilization will assure that all project lands and water are developed according to the best and highest use, and conserved and wisely managed to provide recreational opportunities for present and future generations.

b. This master plan is considered to be a flexible plan of action, establishing the basic direction for development and management of the project consonant with the capabilities of the resource and the public demand. The master plan will be periodically reviewed on a five year basis to facilitate the evaluation and utilization of new information as it becomes available.

17-02. Recommendations. It is recommended that this master plan be approved as the basis for future development and management of the Blue Mountain land and water resources.



- NOTES:
- 1. CONSTRUCTION BEGAN IN 1940 AND WAS ESSENTIALLY COMPLETED IN 1947 AFTER A 4 YEAR DELAY DUE TO WORLD WAR II
 - 2. 5 CFS MINIMUM RELEASE IS MAINTAINED FOR DANVILLE WATER SUPPLY AND OTHER USES.
 - 3. SPILLED IN 1957 AND 1973.
 - 4. DURATION FROM MIDNIGHT POOL ELEVATIONS FOR PERIOD MARCH 1947 THRU 1974.
 - 5. LAKE DRAWN BELOW CONSERVATION POOL FOR FISH MANAGEMENT.
 - 6. RULE CURVE MOSQUITO - CONTROL OPERATION WAS INITIATED WITH THE FILLING OF THE PROJECT MARCH 1947 AND REVISED APRIL 1968.
 - 7. CONSERVATION POOL WAS LOWERED FOR RAMP CONSTRUCTION.

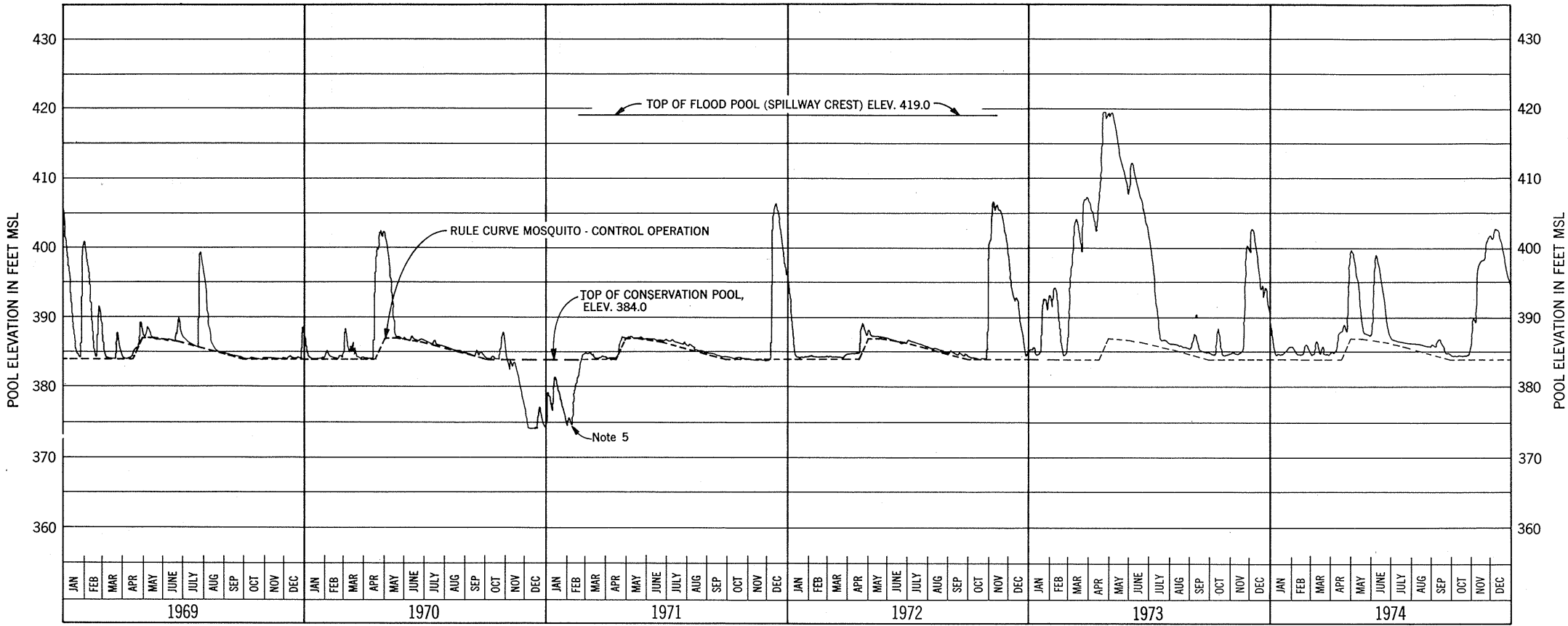
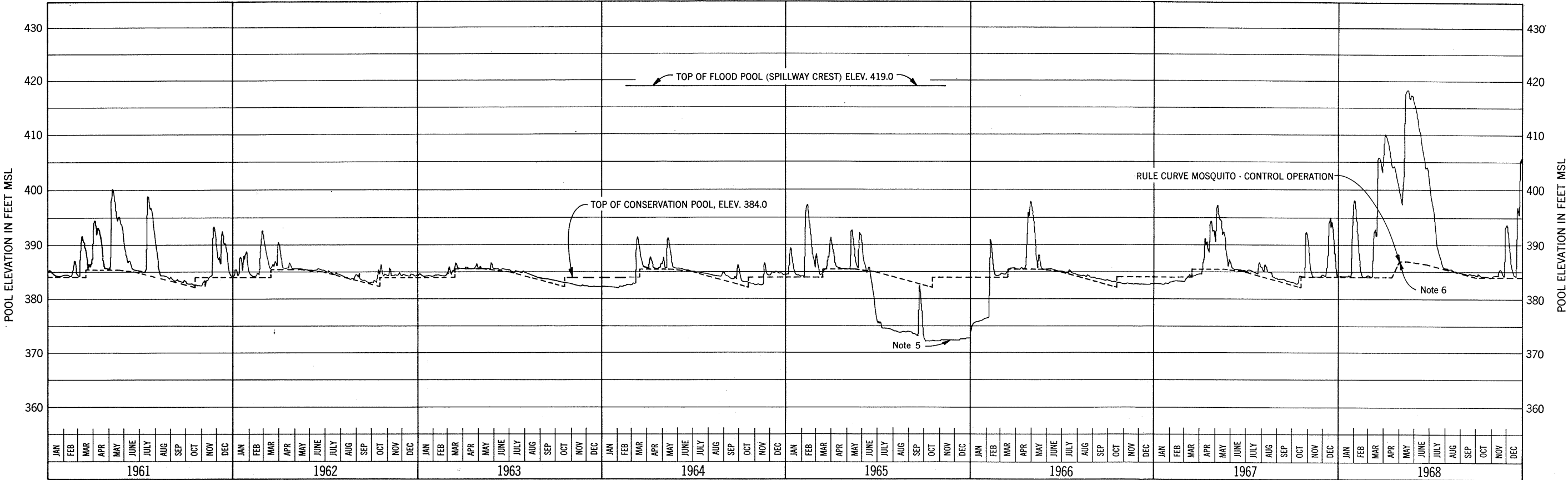
ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS

EXPERIENCED LAKE LEVELS

BLUE MOUNTAIN LAKE

SCALE: AS SHOWN

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1973



- NOTES:
- 1. CONSTRUCTION BEGAN IN 1940 AND WAS ESSENTIALLY COMPLETED IN 1947 AFTER A 4 YEAR DELAY DUE TO WORLD WAR II
 - 2. 5 CFS MINIMUM RELEASE IS MAINTAINED FOR DANVILLE WATER SUPPLY AND OTHER USES.
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 - 4. DURATION FROM MIDNIGHT POOL ELEVATIONS FOR PERIOD MARCH 1947 THRU 1974.
 - 5. LAKE DRAWN BELOW CONSERVATION POOL FOR FISH MANAGEMENT.
 - 6. RULE CURVE MOSQUITO - CONTROL OPERATION WAS INITIATED WITH THE FILLING OF THE PROJECT MARCH 1947 AND REVISED APRIL 1968.
 - 7. CONSERVATION POOL WAS LOWERED FOR RAMP CONSTRUCTION.

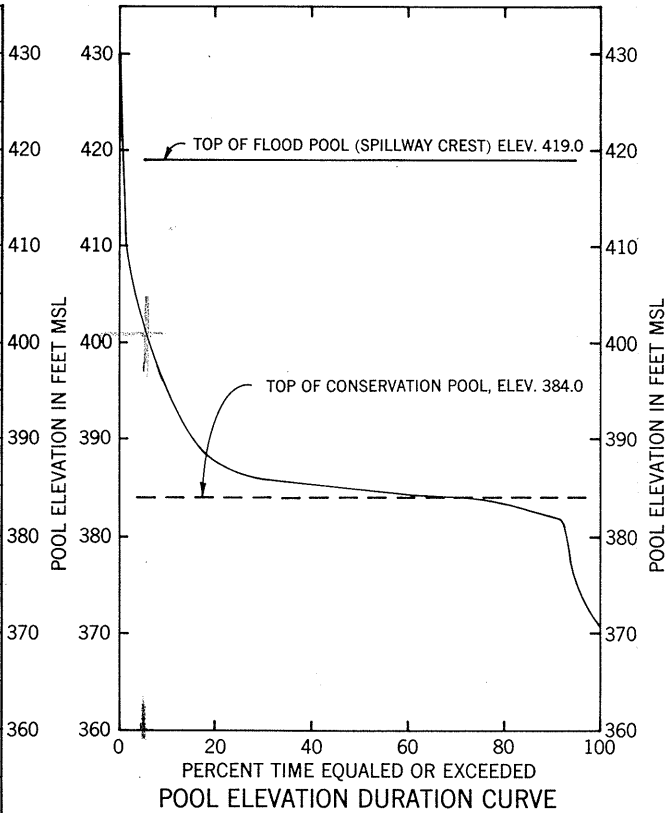
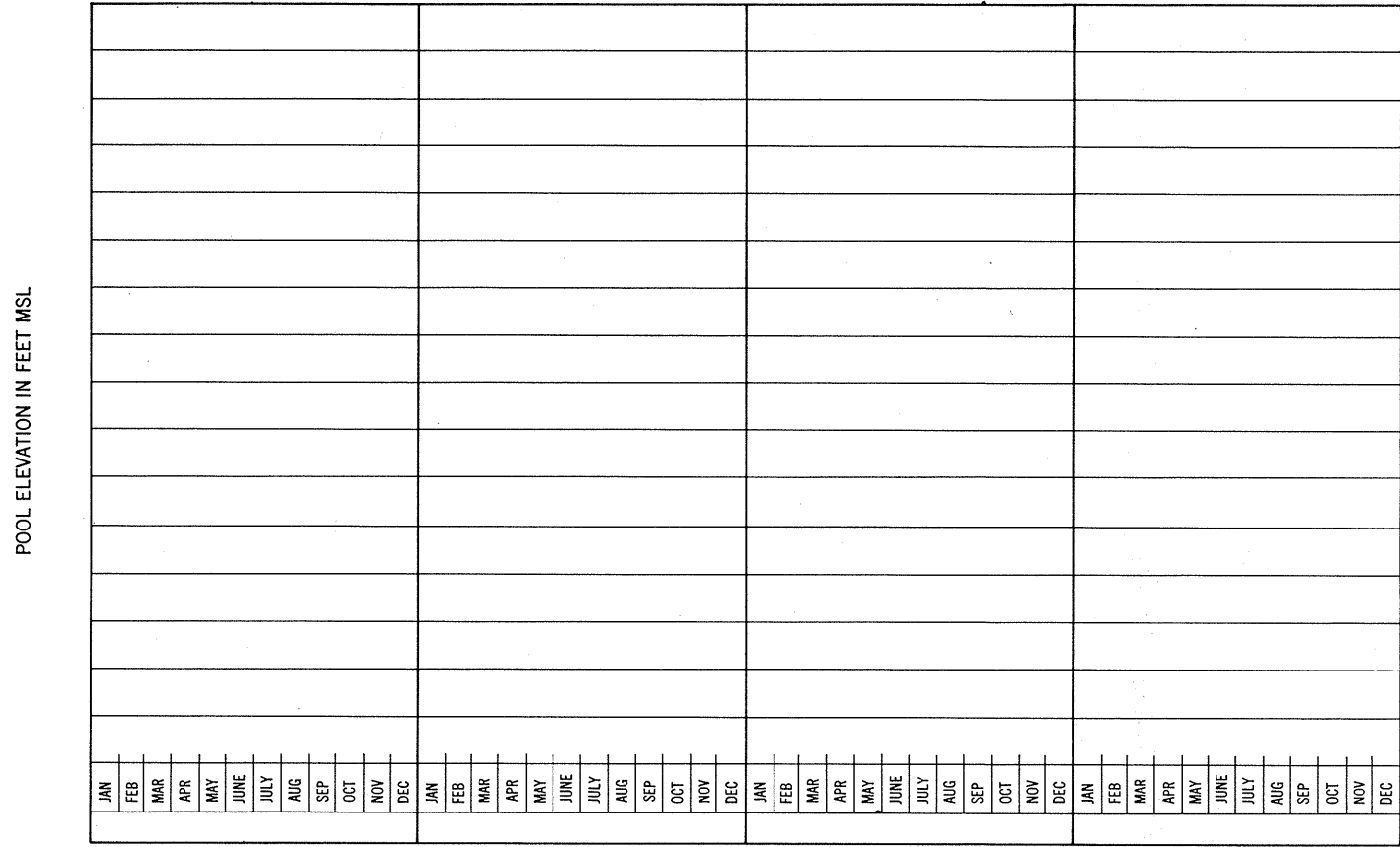
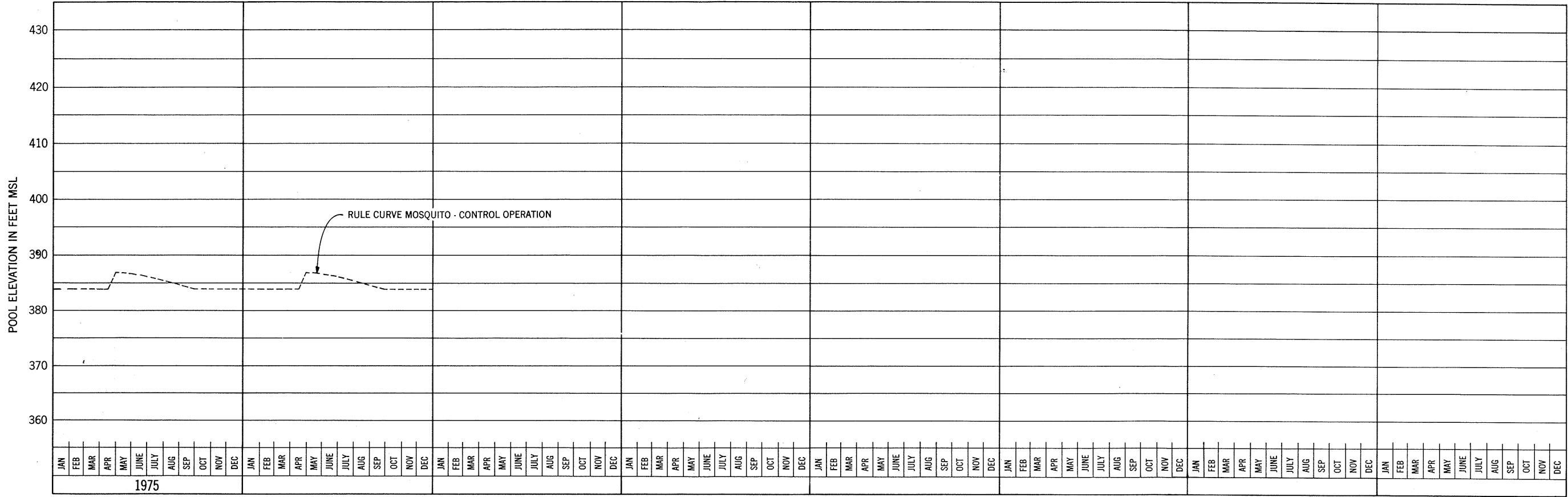
ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS

EXPERIENCED LAKE LEVELS

BLUE MOUNTAIN LAKE

SCALE: AS SHOWN

U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1973



- NOTES:
- 1. CONSTRUCTION BEGAN IN 1940 AND WAS ESSENTIALLY COMPLETED IN 1947 AFTER A 4 YEAR DELAY DUE TO WORLD WAR II.
 - 2. 5 CFS MINIMUM RELEASE IS MAINTAINED FOR DANVILLE WATER SUPPLY AND OTHER USES.
 - 3. SPILLED IN 1957 AND 1973.
 - 4. DURATION FROM MIDNIGHT POOL ELEVATIONS FOR PERIOD MARCH 1947 THRU 1974.
 - 5. LAKE DRAWN BELOW CONSERVATION POOL FOR FISH MANAGEMENT.
 - 6. RULE CURVE MOSQUITO-CONTROL OPERATION WAS INITIATED WITH THE FILLING OF THE PROJECT MARCH 1947 AND REVISED APRIL 1968.
 - 7. CONSERVATION POOL WAS LOWERED FOR RAMP CONSTRUCTION.

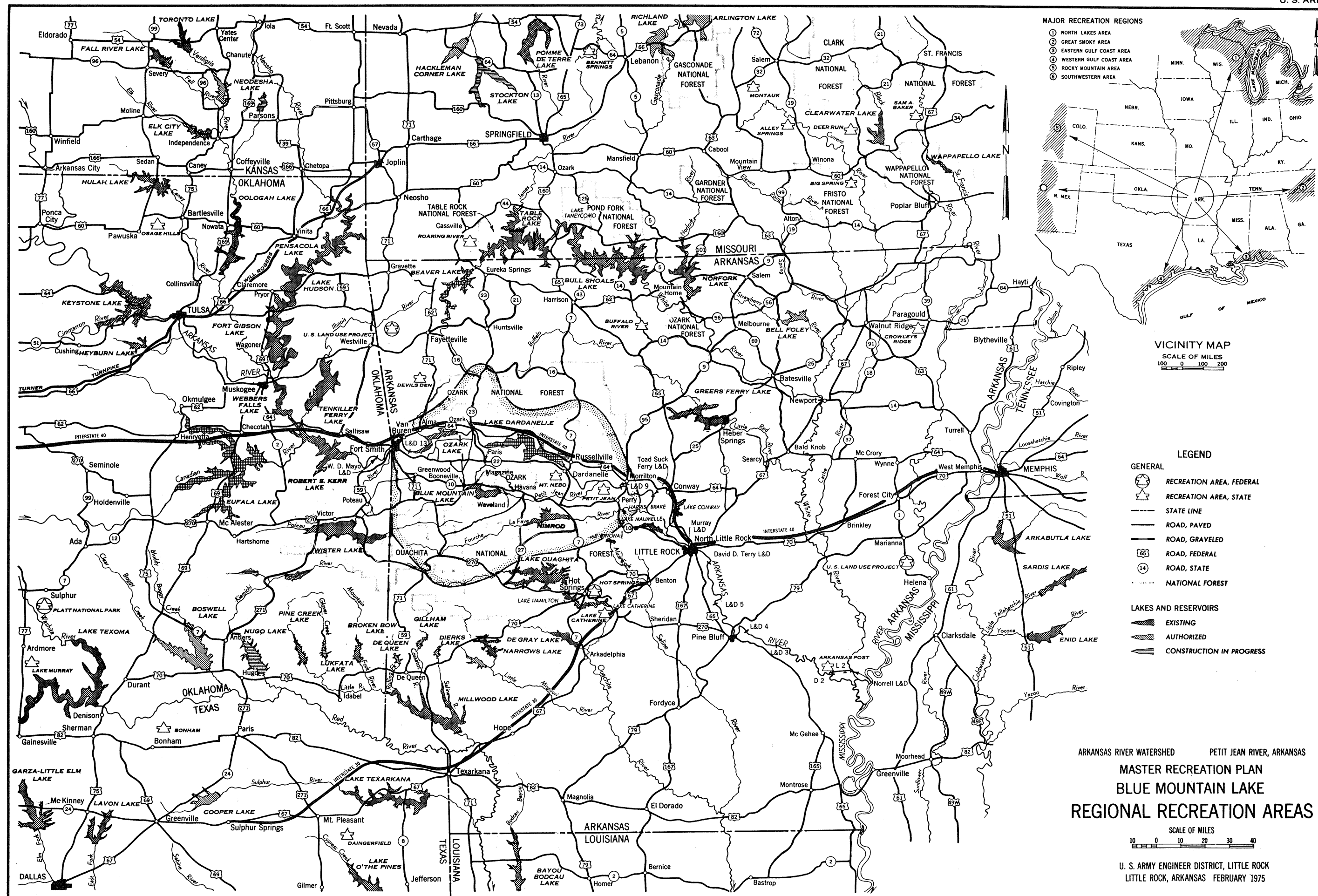
WHITE RIVER WATERSHED WHITE RIVER, ARKANSAS

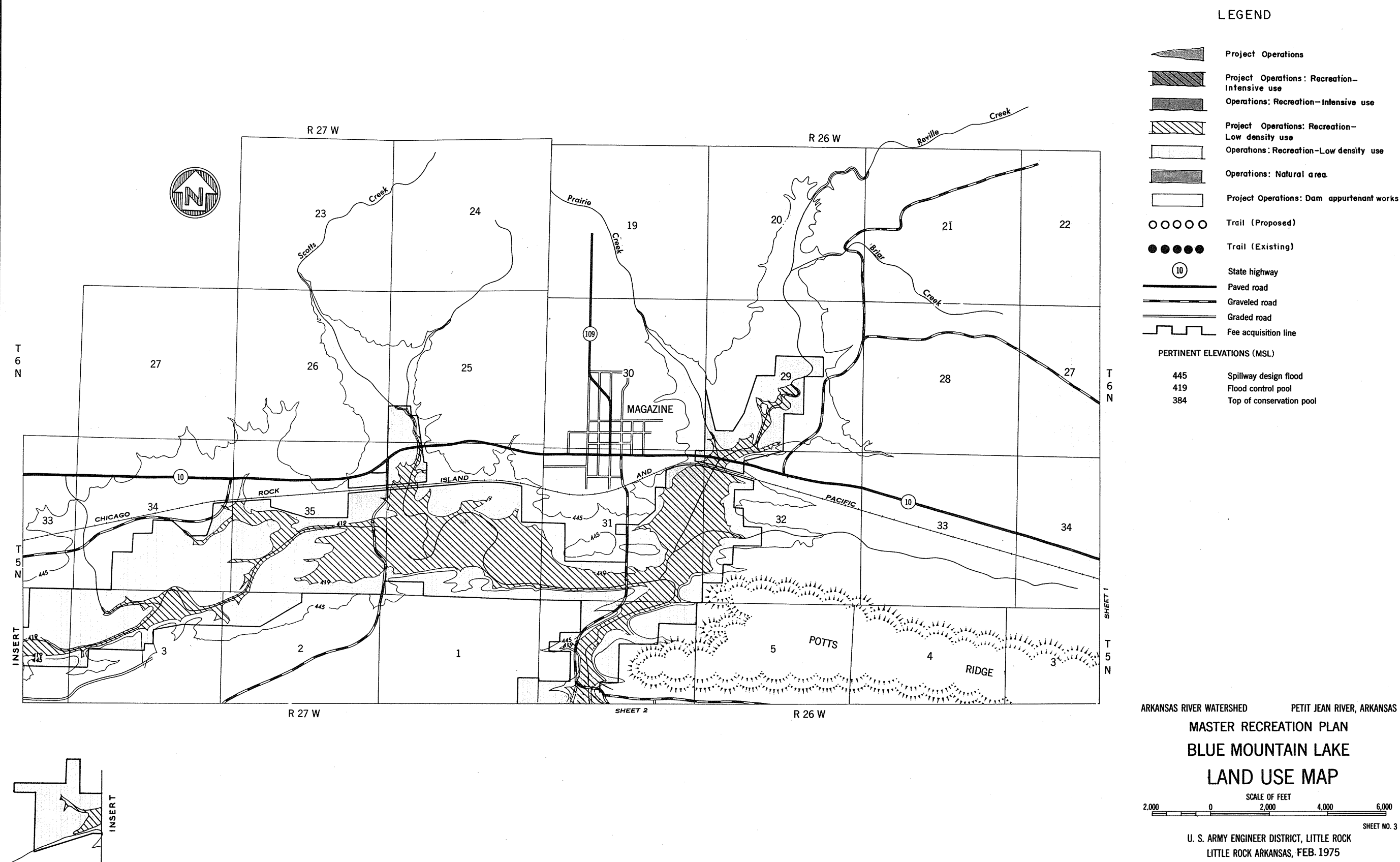
EXPERIENCED LAKE LEVELS

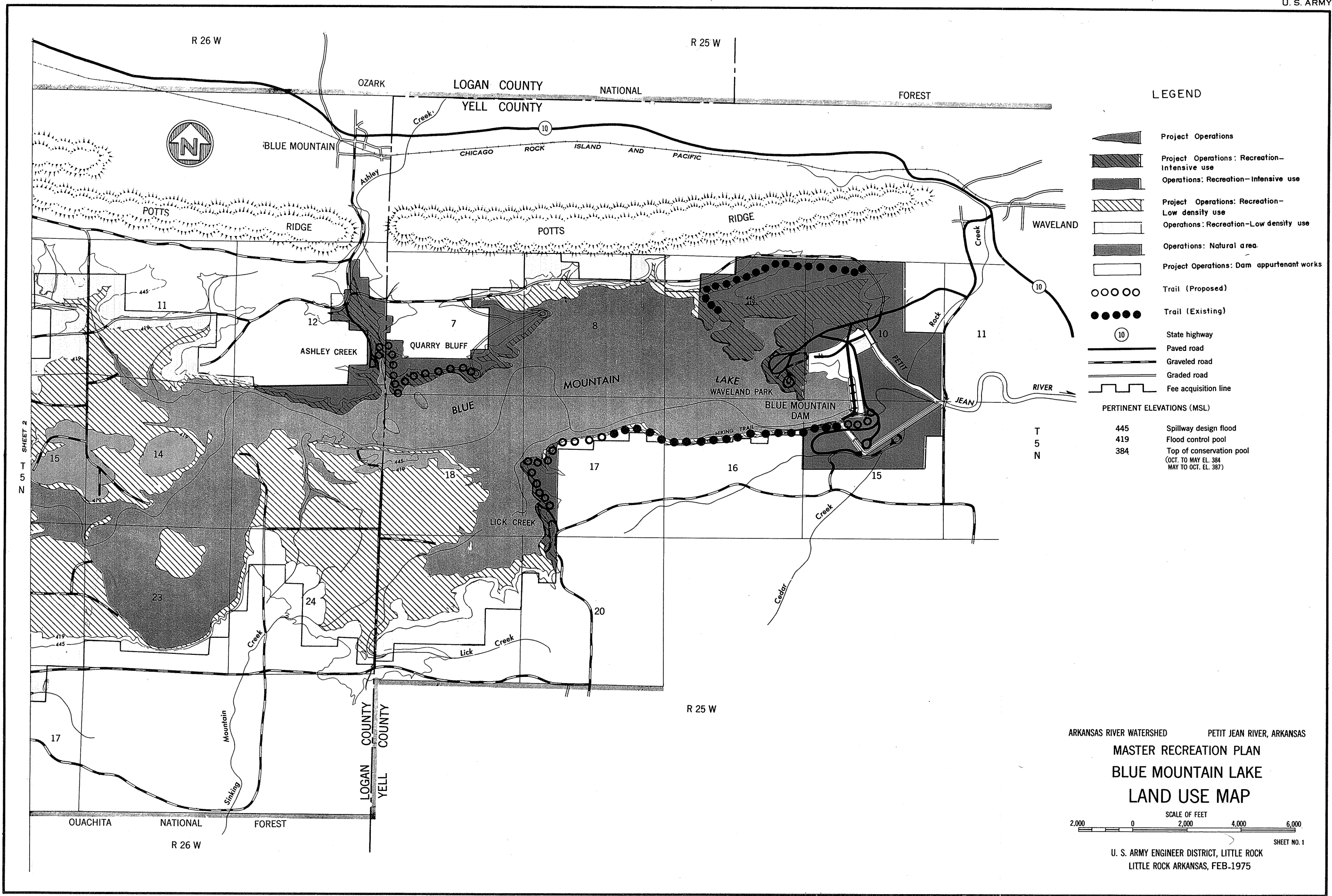
BLUE MOUNTAIN LAKE

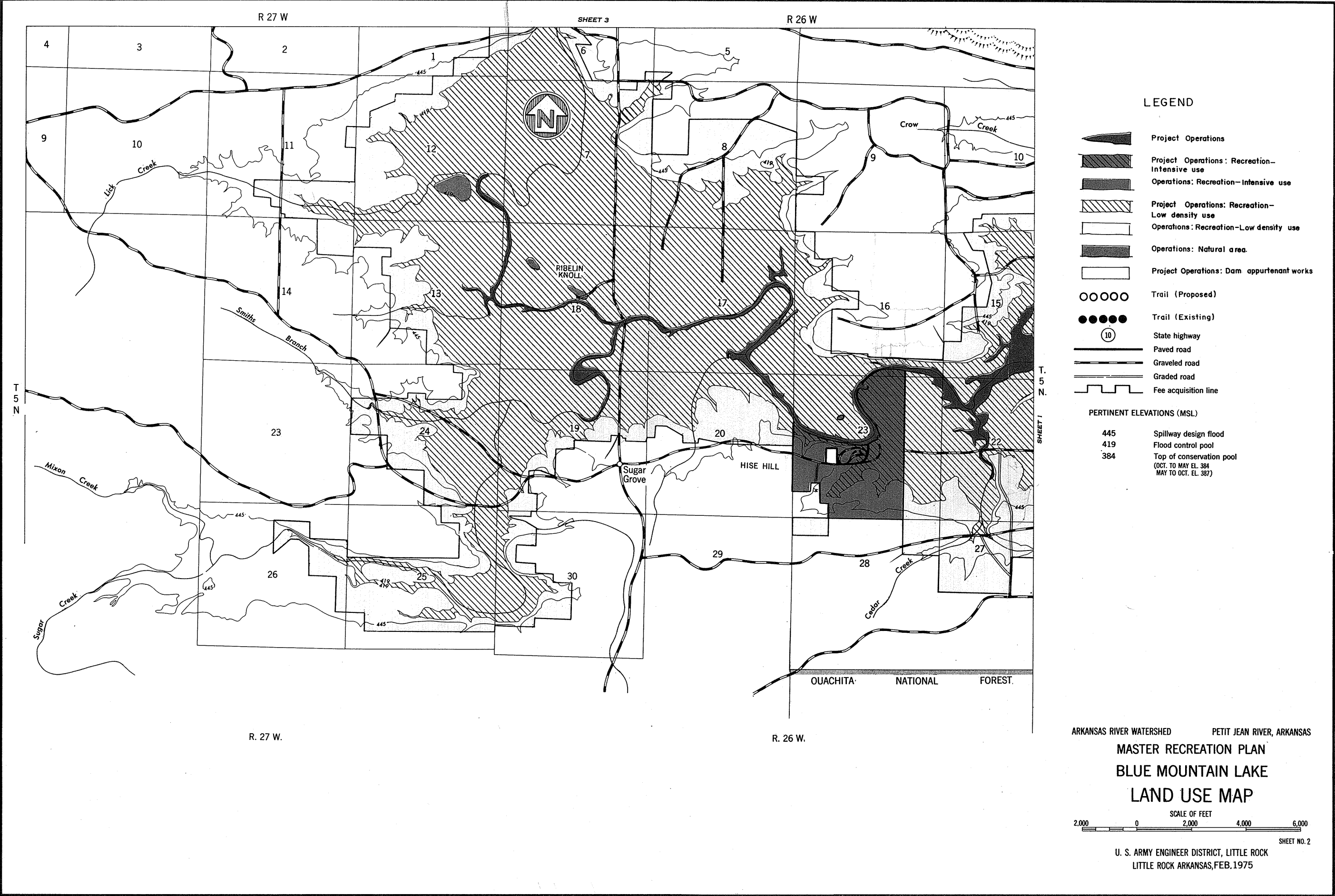
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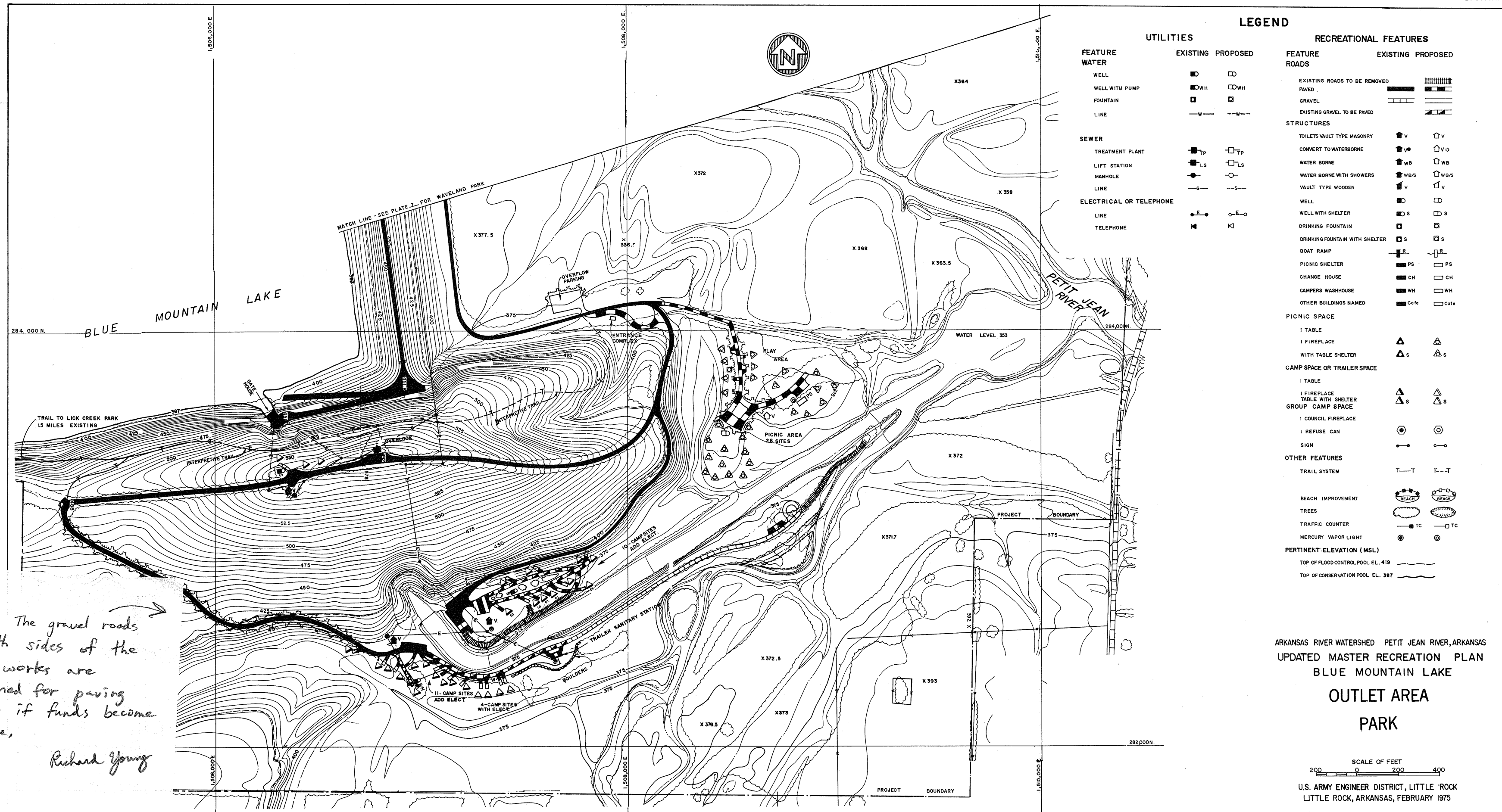
U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, JANUARY 1974







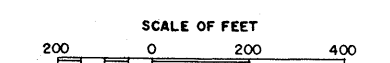




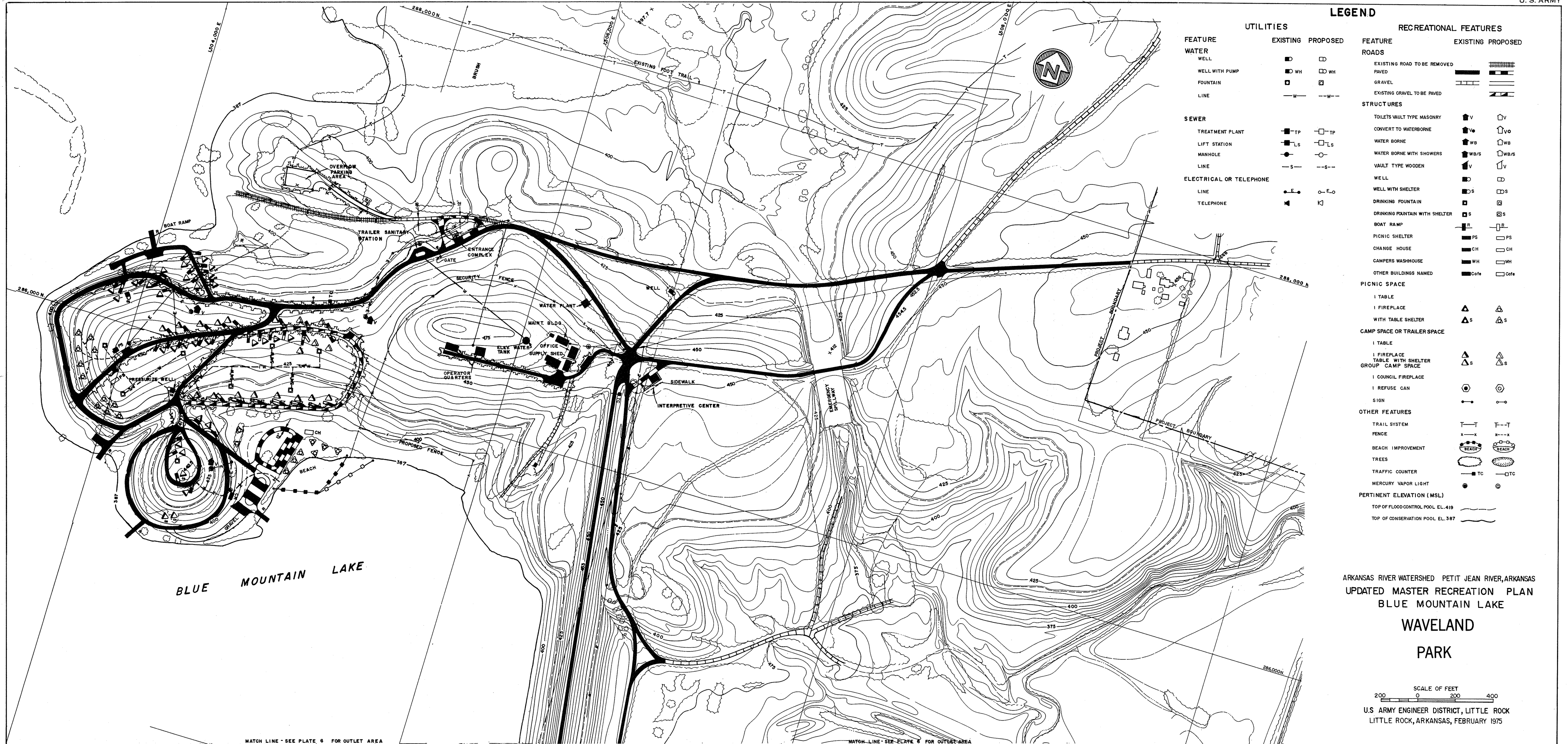


LEGEND
 - - - - - PROJECT BOUNDARY
 _____ TOP OF FLOOD CONTROL POOL EL. 419
 TOP OF CONSERVATION POOL EL. 387
 PREPARED FROM AERIAL PHOTOGRAPHS FLOWN
 FEBRUARY 1973 WHEN POOL WAS AT EL. 392.64

ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
 UPDATED MASTER RECREATION PLAN
 BLUE MOUNTAIN LAKE
 OUTLET AREA
 PARK



U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
 LITTLE ROCK, ARKANSAS, FEBRUARY 1975





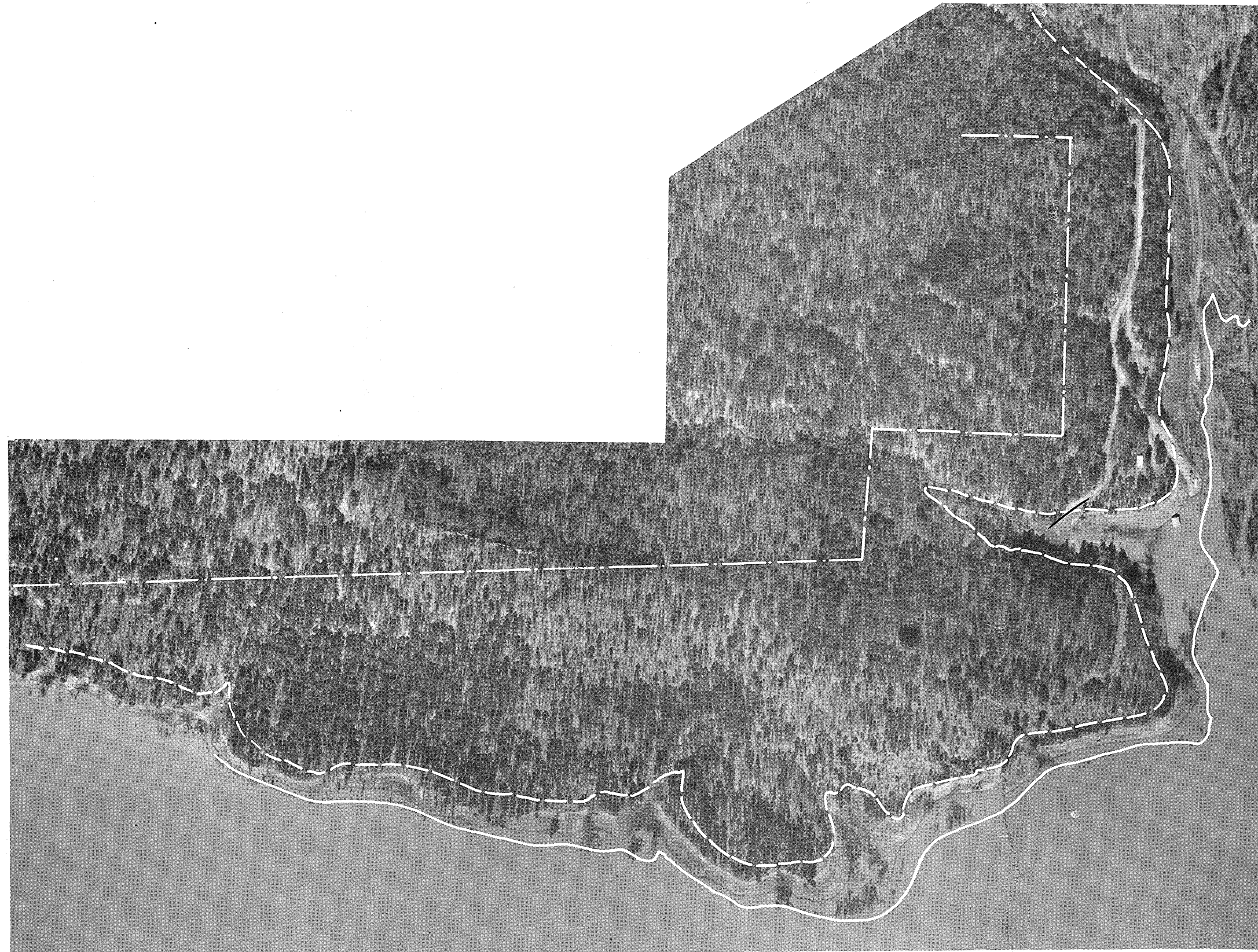
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ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
BLUE MOUNTAIN LAKE
WAVELAND
PARK

SCALE OF FEET
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U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1975

PLATE 7A



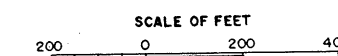
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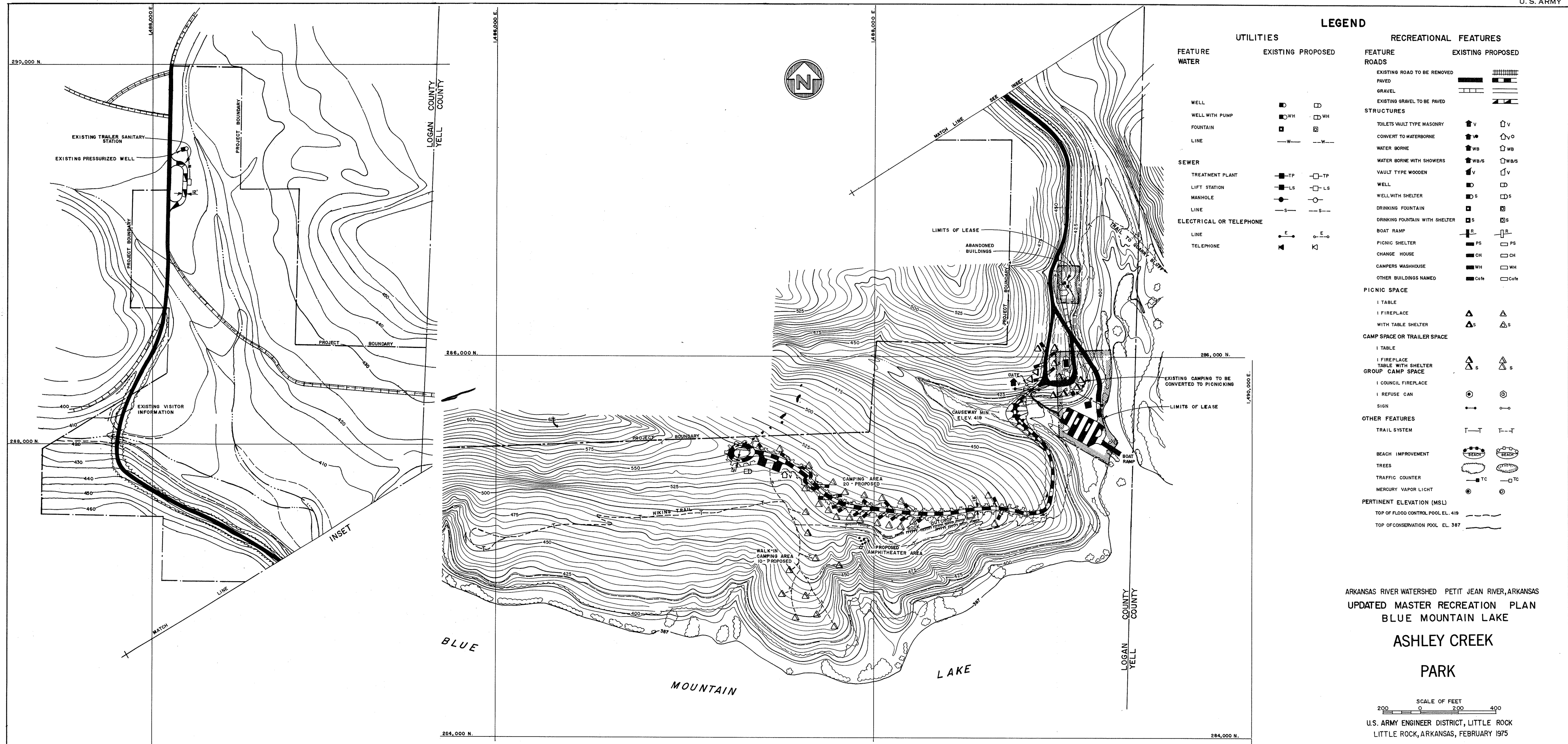
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ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
BLUE MOUNTAIN LAKE

ASHLEY CREEK PARK



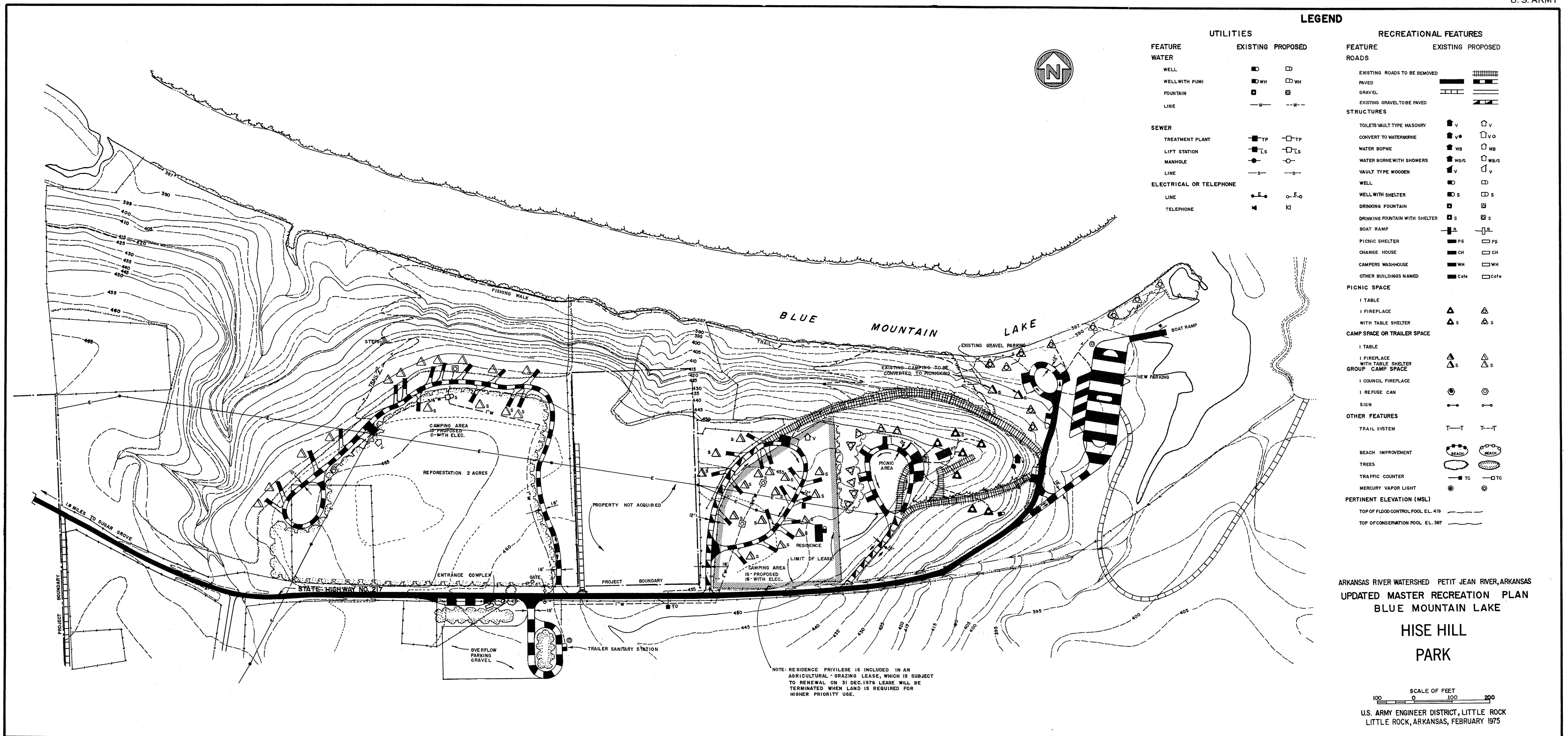
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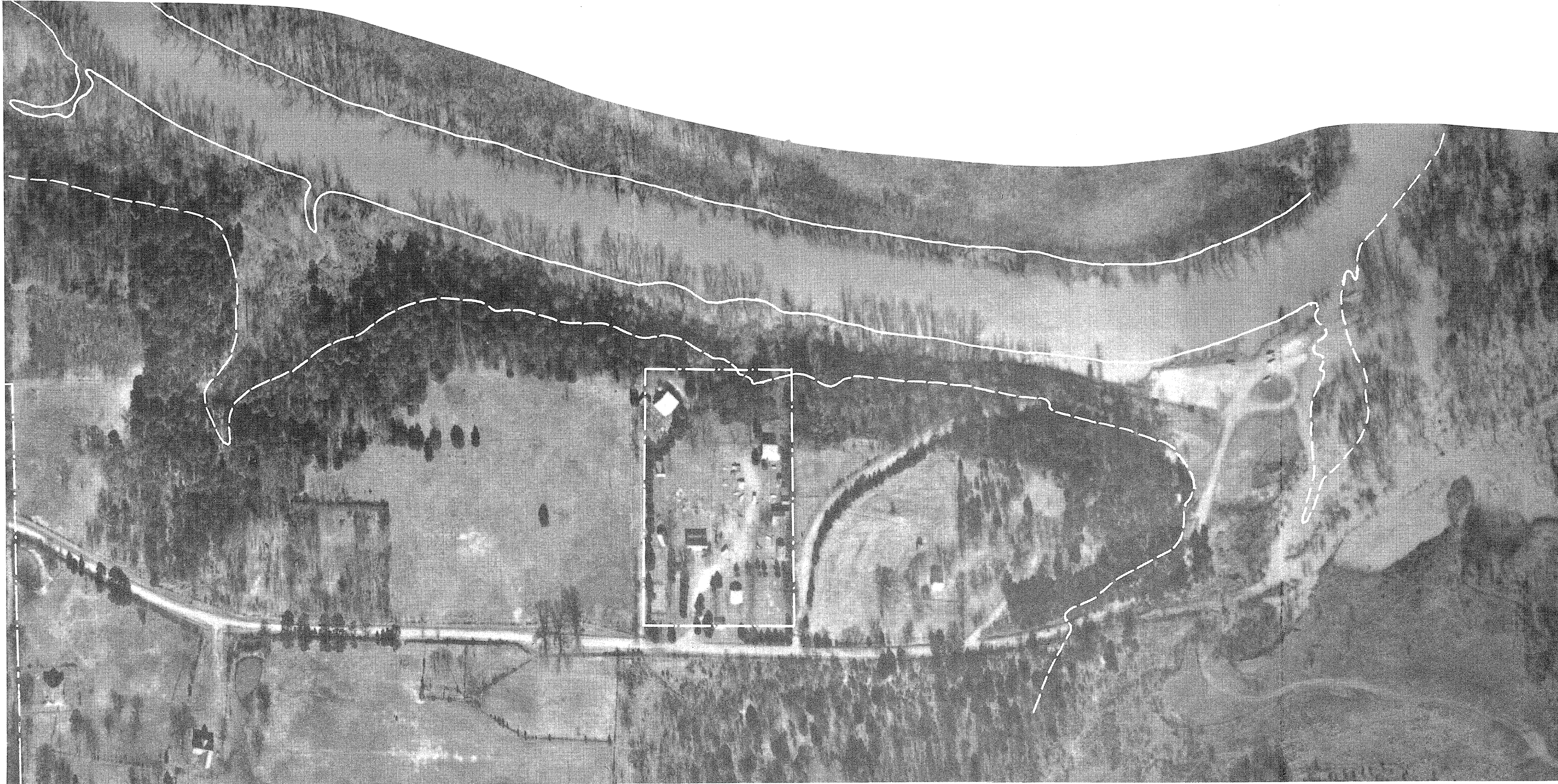


ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
BLUE MOUNTAIN LAKE
ASHLEY CREEK
PARK

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U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1975

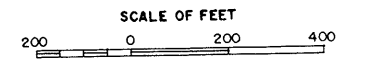




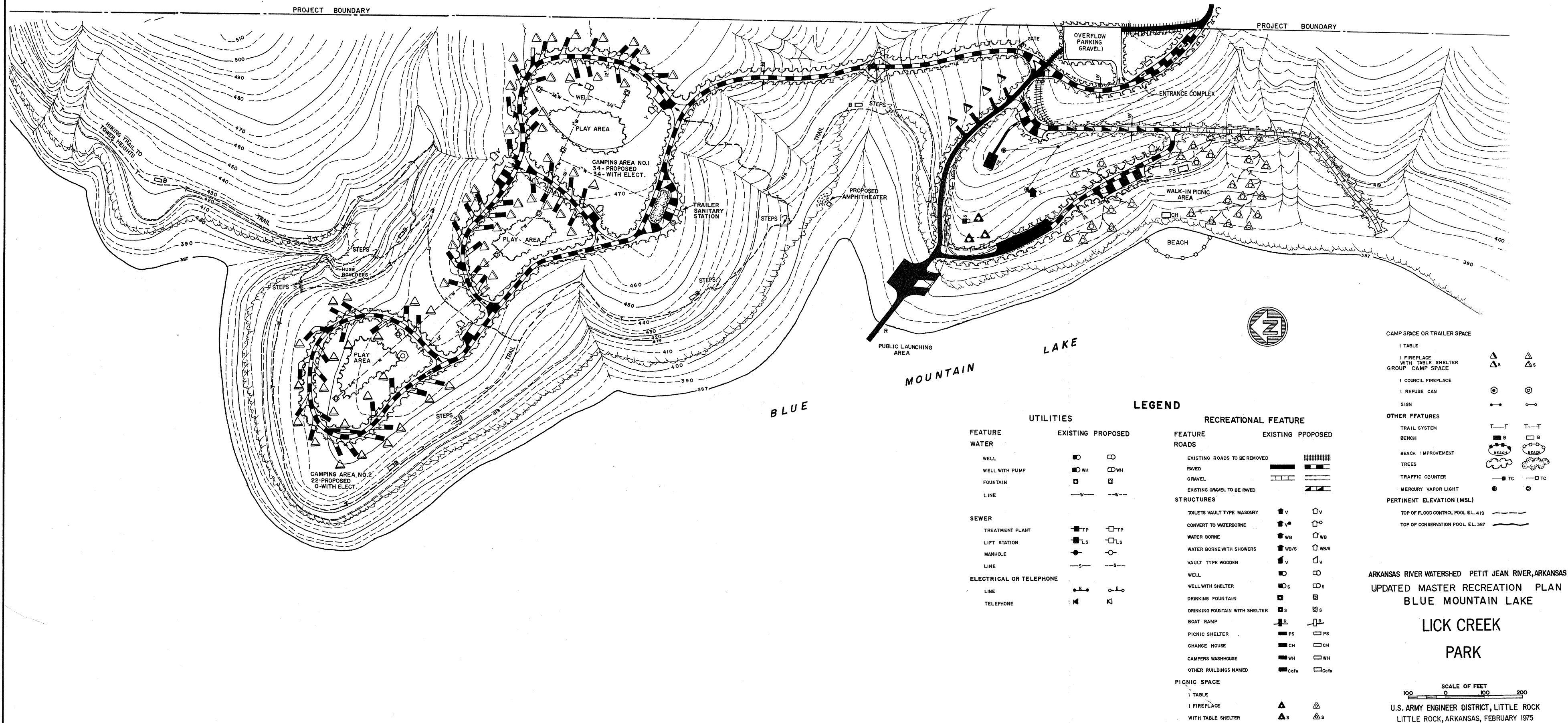
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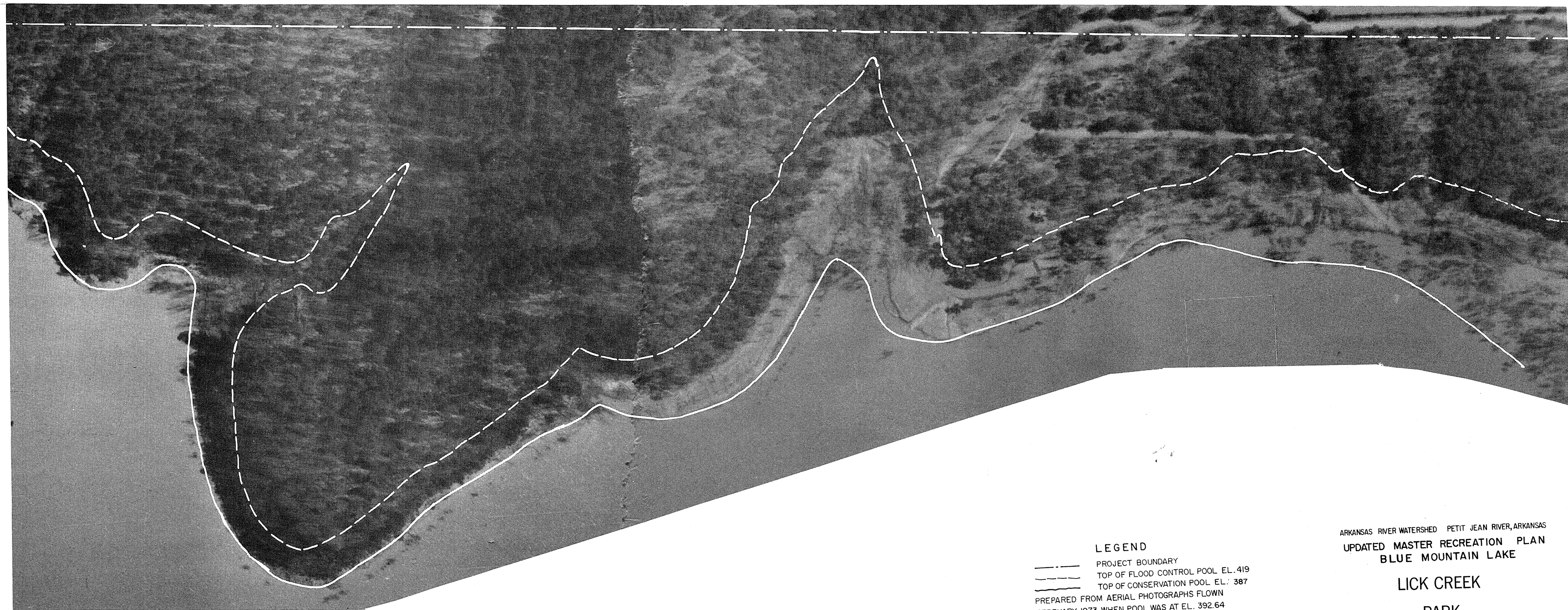
ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
BLUE MOUNTAIN LAKE

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U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1975

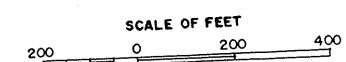




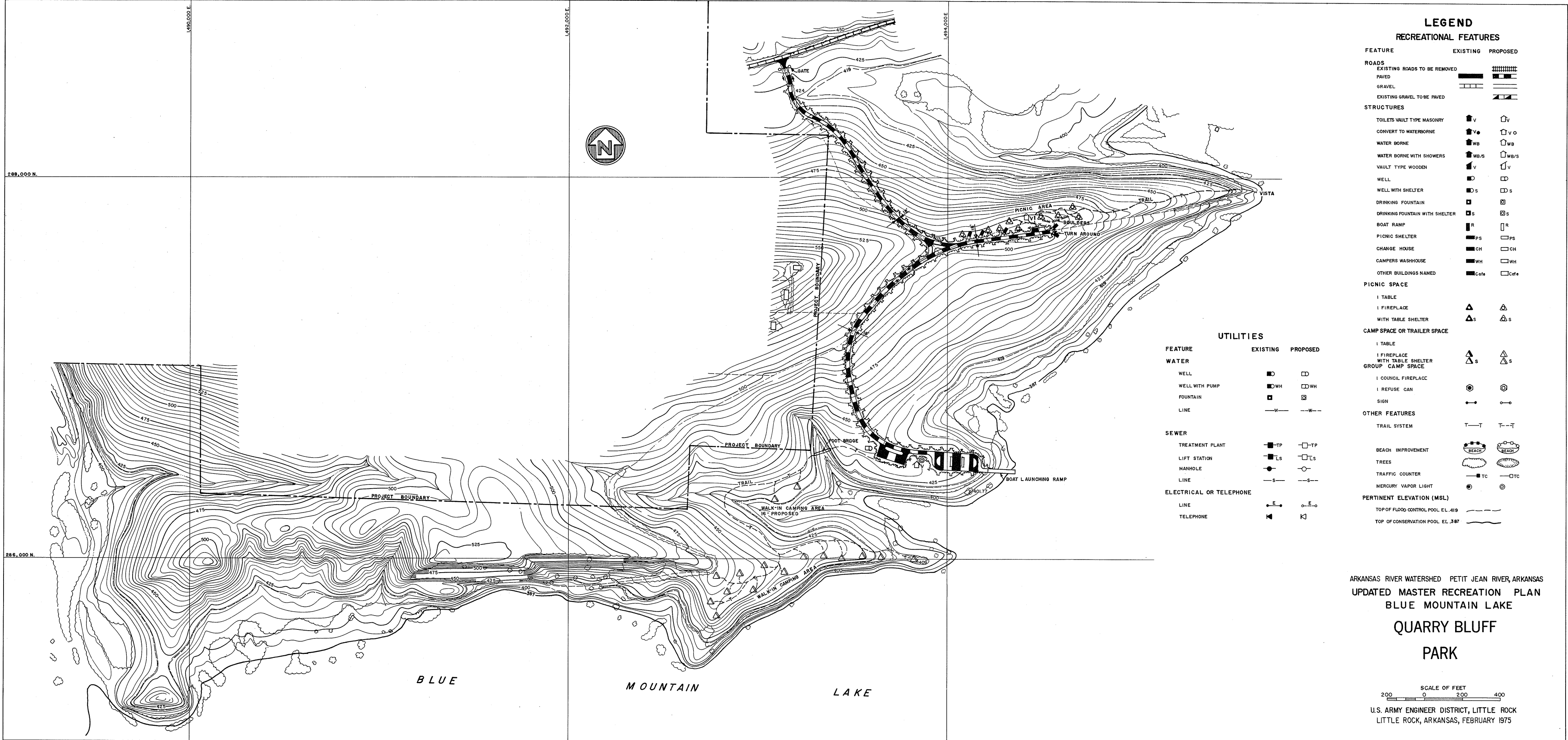
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ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
BLUE MOUNTAIN LAKE

LICK CREEK
PARK



U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1975

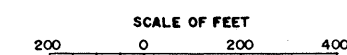




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ARKANSAS RIVER WATERSHED PETIT JEAN RIVER, ARKANSAS UPDATED MASTER RECREATION PLAN BLUE MOUNTAIN LAKE QUARRY BLUFF PARK



U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1975

ARKANSAS RIVER WATERSHED
ARKANSAS

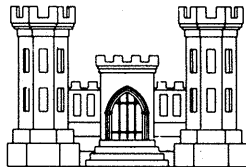
PETIT JEAN RIVER
BLUE MOUNTAIN DAM AND LAKE

DESIGN MEMORANDUM NO. 1-B

**UPDATED MASTER PLAN FOR
LAKE DEVELOPMENT
AND MANAGEMENT**

APPENDIX E

PROJECT SAFETY PLAN



U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
CORPS OF ENGINEERS
LITTLE ROCK, ARKANSAS
SEPTEMBER 1972

SWDCO-OR (SWLCO-L 20 Oct 72) 1st Ind
SUBJECT: Project Safety Plan, Blue Mountain Lake

DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, Texas 75202 23 March 1973

TO: District Engineer, Little Rock, ATTN: SWLCO-L

1. The Appendix is approved subject to the following comments:

a. Para 2-02e. Per conversation with the District Office, the restricted use of metal ladders applies only to repair work on electrical facilities.

b. Para 4-01c. This subparagraph should be clarified pointing out that the sampling and testing program consists of bacteriological analysis.

c. Para 4-04. Specific insecticide names should not be given inasmuch as other insecticides may be used in the future which are more effective. Also, consideration should be given in subparagraphs a and b to inclusion of liquid baits or other insecticidal controls for flies.

d. Para 4-04f. This paragraph should be expanded to state that all insecticides and herbicides will be applied in accordance with label instructions and under the supervision of qualified and trained personnel.


2. At the next revision the above information should be included.

FOR THE DIVISION ENGINEER:

wd incl

CF:

DAEN-CWO-R w/2 cy plan



WALTER E. MCGOWAN

Acting Chief, Construction-Operations
Division



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203

IN REPLY REFER TO

SWLCO-L

20 October 1972

SUBJECT: Project Safety Plan, Blue Mountain Lake

Division Engineer, Southwestern

Appendix E to Design Memorandum No. 1-B Updated Master Plan for Lake
Development and Management is submitted for approval.

FOR THE DISTRICT ENGINEER:

1 Incl (7 cys)

[Signature]
D. A. SCHMAND

Acting Chief, Construction-Operations
Division

ARKANSAS RIVER WATERSHED
ARKANSAS

PETIT JEAN RIVER
BLUE MOUNTAIN DAM AND LAKE

DESIGN MEMORANDUM NO. 1-B

UPDATED MASTER PLAN FOR
DEVELOPMENT AND MANAGEMENT
OF BLUE MOUNTAIN LAKE

APPENDIX E
PROJECT SAFETY PLAN

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ARKANSAS RIVER WATERSHED
ARKANSAS

PETIT JEAN RIVER
BLUE MOUNTAIN DAM AND LAKE

DESIGN MEMORANDUM NO. 1-B

UPDATED MASTER PLAN FOR
DEVELOPMENT AND MANAGEMENT
OF BLUE MOUNTAIN LAKE

APPENDIX E
PROJECT SAFETY PLAN

SECTION I

INTRODUCTION

1-01. Purpose. - The Project Safety Plan will identify common recurring hazards or unsafe conditions in each major phase or area of project operation. The plan prescribes precautionary actions to be taken to prevent, reduce, or control hazardous situations. Areas considered in the plan include construction, maintenance, park facilities, visitor protection, equipment operation, and office operations.

1-02. Authority. - The Appendix is prepared in accordance with the requirements of ER 1130-2-400 dated 28 May 1971.

1-03. References.

- a. AR 385 series.
- b. ER 385 series.
- c. EM 385 series.
- d. SWDR 385 series.
- e. SWDR 1130-2-8.

1-04. Master plan. - This Appendix is a part of the Updated Master Plan for the development and management of Blue Mountain Lake.

SECTION II

ADMINISTRATION FACILITIES

2-01. Office area.

a. General. - No employee shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety.

b. Housekeeping. - The office area shall be kept clean and the litter disposed of daily.

c. Trash containers. - Trash containers shall be emptied daily and refuse disposed of by acceptable means.

d. Fences. - Security fences and gates shall be provided for storage and compound areas and will be kept locked except while occupied.

e. Walkways.

(1) All walkways and steps shall be kept free from mud, ice, snow, grease, or any other material or obstructions which would make them unsafe to the persons using them.

(2) Safety treads shall be provided on steps and handrails installed where heights justify.

f. Inside electrical outlets, fuse boxes, and extension cords.

(1) All electrical outlets and extension cords shall be of the three-conductor type and shall be maintained in good condition.

(2) Fuses and circuit breakers shall be of the proper rating for the circuit protected.

g. Outside electrical outlets. - All outside electrical fixtures and outlets shall be of the weatherproof type.

h. Lighting. - All rooms, halls, restrooms, and entrances shall be properly lighted. Exit lights shall be checked daily and illuminated continuously.

i. Heating plants. - Furnaces shall be separated from office by concrete block walls and steel doors. Outside fresh air intakes shall be provided where combustible fuels are used for heating.

j. Ventilation. - All rooms shall be provided with adequate ventilation for the number of occupants.

k. Firefighting apparatus. - A-B-C dry chemical fire extinguishers, of the proper size, shall be located in all buildings in accordance with requirements of the Safety Manual, EM 385-1-1, and inspected monthly to see that they are properly charged in accordance with Appendix L or EM 385-1-1.

l. A fire safety plan listing assignments shall be posted.

m. A chart shall be posted listing emergency telephone numbers including fire, police, ambulance, and hospital.

2-02. Maintenance compound.

a. Electrical handtools.

(1) All electrical tools, extension cords, receptacles, and male plugs shall be of three-conductor type and will be kept in good repair.

(2) Tools and equipment shall be serviced and maintained in a safe working condition. Maintenance cards shall be used to assure adequate servicing and maintenance.

b. Air operated handtools. - The use of all air operated handtools shall be in accordance with requirements of the Safety Manual, EM 385-1-1.

c. Face shields and eye protection. - Proper shields, guards, goggles of the recommended shade for filter lenses (Appendix A, EM 385-1-1), and other required equipment shall be used in grinding, chipping, and welding operations.

d. Nonelectrical handtools. - All handtools shall be kept in good repair and used only for the purpose for which designed.

e. Ladders. - Wooden ladders conforming to the requirements of the Safety Manual, EM 385-1-1, shall be used for all repair work. Metal ladders will not be used.

f. Hardhats. - Class B safety hats shall be furnished and worn by all employees and visitors in designated hardhat areas.

g. Safety shoes. - Safety shoes shall be worn by employees who are engaged in work which requires such protection.

h. Tool storage. - All tools shall be stored in designated racks or compartments. Tools shall be color coded so they can be easily returned to their correct storage area after use.

i. Firefighting apparatus. - A-B-C dry chemical fire extinguishers, of the proper size, shall be strategically located throughout shops, at gas pumps in storage buildings, and compound

areas in accordance with requirements of the Safety Manual, EM 385-1-1, and inspected monthly in accordance with Appendix L of EM 385-1-1 to see that they are properly charged.

j. Waste containers. - Waste containers shall be emptied daily and refuse disposed of by an acceptable means.

k. Storage of flammables.

(1) All gasoline and diesel fuel shall be stored in approved tanks. Oil, paint, thinners, and other volatile materials shall be stored in an approved building located at least 50 feet from adjoining buildings or structures. "No Smoking" signs shall be posted in these areas.

(2) Flammable liquids shall be stored in approved-type safety containers which meet the requirements of the National Fire Protection Association.

(3) All rags and waste soiled by combustible or flammable materials shall be placed in tightly closed metal containers for daily disposal by acceptable means.

l. Warning signs. - Safety signs shall be located near hazardous shop equipment to warn of danger when operating saws, grinders, and other power tools.

m. Bulletin board and other safety information. - Safety posters and emergency telephone numbers shall be posted in various shop work areas and on the mechanic shop bulletin board.

n. Spray painting. - All spray painting shall be done in a well ventilated area when possible. Hose masks or airline respirators shall be worn by workmen spraying in close quarters.

o. Welding. - All welding shall be done in well ventilated areas. Proper eye and skin protection shall be provided.

p. Vehicle operation. - All vehicles shall be operated in accordance with the requirements of the Safety Manual, ER 385-1-1.

q. Vehicle storage. - All vehicles and equipment shall be parked or stored in predesignated areas to reduce congestion. Keys shall be removed at night and locked in the administration building.

r. Storage of supplies. - Supplies shall be stored orderly in designated areas to conserve space and provide easy access.

SECTION III

STRUCTURES

3-01. Restroom facilities.

a. Safety rails for the handicapped.

(1) All restroom and shower facilities shall be provided with grab rails for the handicapped and elderly.

(2) Access steps and ramps shall be provided with handrails.

b. Lighting. - Waterborne toilets shall be well lighted inside and outside. Where power is available, night watcher lights shall be installed near vault-type toilets to provide light outside and inside through skylights.

c. Disinfecting and deodorizing. - Approved-type disinfectants and deodorants shall be applied during each cleaning operation. All toilet seats shall be scrubbed daily with soap and water or more often during peak seasons, and disinfectants and deodorants applied twice weekly.

d. Walkways.

(1) All walkways and steps and ramps shall be free from mud, ice, snow, grease, or any other material or obstructions which would make them unsafe to the persons using them.

(2) Safety treads shall be provided on steps and handrails provided where necessary.

e. Electrical facilities.

(1) All electrical outlets shall be of the three-conductor type.

(2) Fuses and circuit breakers shall be of the proper rating for the circuit protected.

(3) All outside electrical fixtures and outlets shall be of the weatherproof type.

3-02. Picnic shelters.

a. Parking.

(1) Parking areas shall be provided for ample vehicle parking.

(2) Guard posts or wheel stops shall be set around parking areas where there is danger of vehicles rolling over embankments or into ditches.

b. Walkways.

(1) All walkways and steps shall be free from mud, ice, snow, grease, or any other material or obstructions which would make them unsafe to the persons using them.

(2) Safety treads shall be provided on steps.

c. Electrical facilities.

(1) All electrical outlets shall be of the three-conductor type.

(2) Fuses shall have a safe current-carrying capacity and circuit breakers shall be of the proper rating for the circuit protected.

(3) All outside electrical fixtures and outlets shall be of the weatherproof type.

3-03. Concessions. - Refer to District Regulations regarding safety.

3-04. Overlook structures.

a. Parking.

(1) Parking areas shall be provided for ample vehicle parking.

(2) Guard posts or wheel stops shall be set around parking areas where there is danger of vehicles rolling over embankments or into ditches.

b. Fencing and guardrails. - A chain-link fence or other approved guardrail shall be installed along the top of the bluff at the overlook area.

c. Walkways.

(1) All walkways and steps shall be free from mud, ice, snow, grease, or any other material or obstructions which would make them unsafe to the persons using them.

(2) Safety treads shall be provided on steps.

3-05. Private floating facilities. - Refer to District regulations regarding safety.

3-06. Houseboat facilities with permits. - All houseboats on the lake shall comply with regulations of the Arkansas Department of Health.

SECTION IV

SANITATION

4-01. Water supply.

a. Project Office. - The water supply for the office is furnished from a chlorinated and filtered system. The water from the lake system shall be tested at scheduled intervals.

b. Public drinking water supply. - Water supplies in the parks shall be wells equipped with hand or electric pumps.

c. Testing. - Water samples from each drinking water source at the project shall be submitted monthly to the Arkansas Department of Health for testing. If the second sample is found unsafe, the well shall be disinfected, pumped out, and resampled.

4-02. Sewage facilities.

a. Vault-type toilets. - Vault-type toilets and trailer dump stations shall be pumped out as needed and 200 gallons of water with disinfectant and deodorant shall be added to vault. All material removed from the vaults shall be disposed of in a State-approved sewer system.

b. Waterborne-type toilets. - Waterborne toilets shall have septic tanks and disposal fields or be connected to an approved sewage disposal system.

c. Marine dump stations. - The holding tanks of the marine dump stations shall be pumped out as needed. All material removed from the tank shall be disposed of in a State-approved sewer system.

4-03. Solid waste disposal facilities. - All solid waste shall be disposed of in private and public dumps operated in accordance with standards approved by the Department of Health. When the haul distance would preclude using municipal disposal areas, trench fill disposal areas meeting State standards will be operated on Government lands by hired labor forces.

4-04. Insect and poisonous plant control.

a. Flies in public restroom areas. - A granular-type fly bait shall be used twice weekly or as necessary to control flies during infestation. The use of mechanical fly traps shall also be considered. Flies are also controlled by spraying ceilings and walls with molathoin.

b. Flies in park areas. - A granular-type fly bait, Golden Malrin, shall be sprinkled on trash container lids and around toilets as necessary to control flies during infestation. The use of mechanical fly traps and spraying the area with a chlorane solution shall also be considered.

c. Mosquitoes in park areas. - Measures shall be taken to control mosquitoes in the park areas by spraying insecticide when it is determined necessary. Martin houses shall be constructed and the resulting Martin population should give an adequate degree of mosquito control.

d. Poison ivy, poison oak, and poison sumac in park areas. - Poison ivy, poison oak, and poison sumac shall be controlled in parks by using registered herbicides or other suitable methods of control as determined necessary.

e. General weed control. - Control will normally be accomplished by mechanical means or by hand cutting. Spraying weeds and brush shall be with weed and brush killer as necessary.

f. Insecticides and herbicides. - Only registered insecticides and herbicides shall be used.

SECTION V

ACCESS

5-01. Roads.

a. Signs and guard posts. - Traffic control signs (referenced in the SWD Sign Handbook), guard posts, and guardrails shall be installed and maintained to assure safe travel.

b. Road widths, grades, and curves. - Road widths, grades, and curves shall provide maximum safety to traffic.

c. Camp roads and turnouts. - Camp roads and turnouts shall provide minimum despoilment of the terrain, yet provide safe grade, clearance, and visibility.

5-02. Trails.

a. Wooden bridges. - Wooden bridges shall be inspected periodically and worn or broken members repaired or replaced.

b. Wooden steps. - Wooden steps with handrails shall be provided where grade warrants and inspected periodically for repair.

c. Handrails. - Handrails shall be provided where trails border steep and unsafe terrain, and shall be inspected periodically for repair.

d. Danger signs. - Signs as shown in the SWD Sign handbook shall be installed to warn of existing dangers. (Example: Dropoffs, loose rock, etc.)

e. Culverts. - Culverts shall be provided where needed in all other walks, roads, and parking areas. Guard posts shall be set at each culvert on main access roads. Native stone headwalls shall be constructed at each end of culverts.

f. Inspection. - The trails shall be inspected each spring to see if any exposed rock has been loosened by weathering. The trails shall also be inspected following any seismic activity in the region.

5-03. Parking areas.

a. Toilet, shelter, launching, and swimming areas. - Parking areas shall be provided for ample vehicle parking at wells, toilets, shelters, and launching and swimming areas. Guard posts shall be set around parking areas where there is danger of vehicles accidentally rolling over embankments or into ditches or water.

b. Camping areas. - Paved or gravel turnouts shall provide vehicle access and parking at campsites.

c. Picnic areas. - Barriers shall be provided at the end of turnouts where danger exists of vehicles accidentally rolling toward picnic tables.

5-04. Traffic control.

a. Road signs. - Roads shall have traffic control devices as required by EM 1110-2-400 dated 1 February 1971.

b. Lake warning signs. - Warning signs, as shown in the SWD Sign Handbook, shall be posted at all roads ending in the lake.

c. Swimming and launching area signs. - Signs, as shown in the SWD Sign Handbook, shall be used at launching areas to keep swimmers, boats, and vehicles separated.

d. Traffic gates. Gates shall be installed at entrances to parks where applicable to control traffic during quiet hours.

e. Control of motorized recreational vehicles, motorcycles and motorbikes. - Motorized recreational vehicles, motorcycles, and motorbikes shall be confined to the main thoroughfares and shall not be allowed to annoy or harass campers and picnickers. Motorized vehicles without mufflers shall not be permitted. (See Title 36, CFR.) Those who do not comply with Title 36 will be issued verbal and written warning citations and, in aggravated cases, citations will be issued.

SECTION VI

PARK FACILITIES

6-01. Camping areas.

a. Fireplaces. - Fireplaces or charcoal grills shall be furnished at each campsite to prevent fires from being built in unauthorized areas. Areas around fireplaces shall be cleared in order to prevent spread of fires. Fireplaces shall be equipped with end flaps to control excessive draft from wind. They shall be located so that fire will not damage overhead foliage.

b. Dead limbs in trees. - Dead limbs and trees shall be removed from camping areas.

c. Tripping hazards. - The area around the tables shall be landscaped and graded to eliminate tripping or falling hazards. Access paths shall be bordered by natural vegetation.

d. Garbage cans. - Garbage cans with lids shall be provided at campsites.

6-02. Picnic areas.

a. Fireplaces. - Fireplaces or charcoal grills shall be furnished at each picnic site to prevent fires from being built in unauthorized areas. Areas around fireplaces shall be cleared in order to prevent spread of fire. Fireplaces shall be equipped with end flaps to control excessive draft from wind. They shall be located so that fire will not damage overhead foliage.

b. Dead limbs in trees. - Dead limbs and trees shall be removed from picnic areas.

c. Tripping hazards. - The area around the tables shall be landscaped and graded to eliminate tripping or falling hazards.

d. Garbage cans. - Garbage cans with lids shall be provided at picnic sites.

6-03. Swimming areas.

a. Signs. - At designated swimming areas, signs which state "No Lifeguard - Swim at Own Risk", as shown in the SWD Sign Handbook, shall be maintained. Warning signs shall be placed at swim areas and will list the total number of drownings which have occurred on the lake to date.

b. Buoyed areas.

(1) Hard shell buoys connected with cables shall encircle major swimming areas. Shallow areas for children shall be delineated by blue and white floats.

(2) Tank-type buoys shall be marked with "Boats Keep Out" signs and symbols as shown in the SWD Sign Handbook.

(3) Navigation-aid buoys shall be adjusted as underwater hazards develop due to lake elevation fluctuations.

c. Concrete swim ramps. - Concrete swim ramps shall be kept free of algae that can cause unsafe footing.

d. Garbage cans. - Garbage cans with rain and insect proof lids shall be provided at each beach.

6-04. Boat ramps.

a. Adjacent to swimming areas. - Where ramps are in the immediate vicinity of swimming areas, signs as shown in the SWD Sign Handbook shall be erected to keep vehicles, boats, and swimmers separated.

b. Surface of ramps.

(1) Ramps shall be surfaced with concrete with 1-inch deep V-grooves to provide maximum traction. All ramps shall be adequately marked.

(2) Where long waiting periods are required, double ramps may be provided.

c. Maximum grade. - The maximum grade of boat launching ramps shall be 16 percent.

d. Minimum grade. - The minimum grade of boat launching ramps shall be 12 percent.

6-05. Concession and marina facilities.

a. Periodic inspections. - Commercial boat docks shall be inspected monthly by rangers.

b. District regulations. - Commercial concessions and marina facilities shall conform to the District regulations regarding safety inspections.

SECTION VII

PUBLIC INFORMATION

7-01. Severe weather warnings. - An alert notification list shall be maintained. Under severe weather conditions where there is a danger of flooding, the Resident Engineers shall alert Government contractors, navigation interests, boat dock concessionaires, and other appropriate private interests in the area, furnishing latest reports of flood situation and predicted progress of floodstages in the area.

7-02. Fireside programs. - When time permits, night programs, safety talks, movies, and slides shall be given by rangers during periods of high visitation.

7-03. Navigation hazards.

a. All known underwater hazards shall be marked with appropriate buoys as the lake level fluctuates.

b. Launching areas and commercial boat dock areas shall be marked with buoys to regulate speed in these areas.

c. Location markers shall be strategically located on shoreline of lake and shown on the information folder maps to help guide boaters.

7-04. Bulletin boards. - Posters and bulletins on water and boating safety shall be provided by Corps of Engineers and displayed by concessionaires and on other bulletin boards in each of the parks.

7-05. Safe Boating Week. - Special emphasis shall be placed on Safe Boating Week with additional signs, posters, broadcasts, and articles.

7-06. Radio and television broadcasts. - Radio and television broadcasts shall be used to inform and educate the public of water safety practices.

7-07. Newspaper articles. - Newspaper articles shall be used periodically to inform the public of water safety practices.

7-08. Service club speaking engagements. - When time permits, rangers, or other employees shall speak to service clubs, churches, etc., to promote safety on Corps controlled lakes.

7-09. Terrain hazards. - Signs as shown in the SWD Sign Handbook shall be erected to warn of unusual dangers such as steep bluffs, falling rocks, fast rising water, and other terrain hazards.

7-10. Instructional signs buoyed. - Buoyed instructional signs as shown in the SWD Sign Handbook shall be placed in pertinent areas.

7-11. Location signs. - Location signs as shown in the SWD Sign Handbook shall be placed in the parks to inform visitors of areas of importance.

7-12. Designated hunting areas. - Designated "Hunting" areas and "No Hunting" areas shall be coordinated with the State Game and Fish Commission as they enforce the hunting regulations.

7-13. Emergency information. - Emergency information shall be posted conspicuously in such places as commercial docks, life buoy posts, and other locations which the Resident Engineer thinks necessary. This information shall contain the addresses and telephone numbers of the nearest doctors, hospitals, police department, fire department, and Civil Defense headquarters.

7-14. National emergency. - During a national emergency, the Corps of Engineers shall work closely with the Civil Defense and assist the Civil Defense in issuing emergency information.

SECTION VIII

GENERAL

8-01. Crowd control.

a. Ranger patrols. - Rangers shall patrol the parks more frequently during the summer months. They shall maintain radio contact with officers of the county sheriff's office.

b. Two-way radio. - Rangers shall use two-way radios as a means of communication and to report on crowd control.

c. Local law enforcement coordination. - The county sheriff's department shall be the law enforcing body. In cases of civil disturbances, all incidents relating to proposed or actual civil disturbances or demonstrations shall be promptly relayed by telephone to the District Engineer and to the local law enforcement officials. A chronological log of events shall be maintained by the field installation or activity for record and a followup report made on ENG Form 4337, Incident Report. The District Physical Security Officer or Deputy District Engineer shall relay the telephone report to SWDPM, SWD, telephone 214/749-3337.

8-02. Health safety and welfare.

a. Weekly safety meetings. - A weekly safety meeting for all employees shall be conducted covering topics related to current operations and activities. A record of these meetings shall be maintained at the project.

b. First aid kits. - A minimum of one 16-unit first aid kit shall be installed in all vehicles, boats, and shops.

c. Safety glasses. - Safety goggles or safety glasses shall be issued to all employees subject to eye hazards.

d. Safety shoes. - Safety shoes shall be issued to employees when they are subject to foot hazards.

e. Safety equipment.

(1) All necessary safety equipment needed for various jobs shall be issued to employees as needed. Employees shall be properly instructed on the use of first aid equipment available at each project.

(2) All boats shall be equipped with safety equipment as required by the Motor Boat Operators Manual issued by the Corps of Engineers.

f. Vehicle safety. - All vehicles shall be equipped with seatbelts and have a reminder sign on dash of vehicle. Operators of Government vehicles must have valid Government driver's permits and valid state driver's license. Mud and snow tires shall be installed during the winter months.

g. Rollover protection system on heavy equipment. - All heavy equipment shall have rollover protection system installed.

h. General safety. - All equipment, employees, and contractors must comply with the general safety requirements of EM 385-1-1.



DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203

REPLY TO
ATTENTION OF:

SWLCO-L

29 May 1975

SUBJECT: Private Floating Facilities, Blue Mountain, Clearwater,
Nimrod and Ozark Lakes

Division Engineer, Southwestern
ATTN: SWDCO-R

1. There were no private floating facilities on Blue Mountain, Clearwater, Nimrod and Ozark Lakes as of 13 December 1974, the effective date of ER 1130-2-406. In accordance with the policy of the Chief of Engineers, no private floating facilities will be permitted on these lakes.

2. Upon approval of this action, copies of this correspondence will be made a part of the master plans for these projects to satisfy the requirements for an Appendix F.

DONALD G. WEHNERT
Colonel, Corps of Engineers
District Engineer

SWDCO-R (SWLCO-L 29 May 75) 1st Ind

SUBJECT: Private Floating Facilities, Blue Mountain, Clearwater,
Nimrod and Ozark Lakes

DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, TX 75202

10 JUN 1975

TO: District Engineer, Little Rock, ATTN: SWLCO-L

Approved.

FOR THE DIVISION ENGINEER:

George W. Staples
GEORGE W. STAPLES
Chief, Construction-
Operations Division