

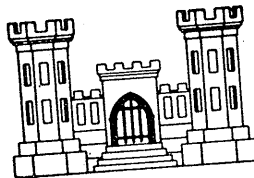
ARKANSAS RIVER WATERSHED

NIMROD LAKE

FOURCHE LA FAVE RIVER
ARKANSAS

DESIGN MEMORANDUM NO. 1-D

UPDATED MASTER PLAN FOR DEVELOPMENT AND MANAGEMENT OF NIMROD LAKE



012

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/13 Sep 91) 1st End Mr. McCauley/iv/FTS
729-2434

SUBJECT: Supplement No. 5, Updated Master Plan Design Memorandum
No. 1-D, Nimrod Lake

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

3 OCT 1991

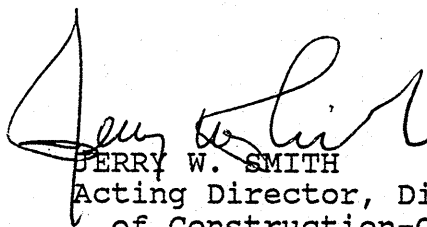
FOR Commander, Little Rock District, ATTN: CESWL-CO-L

Supplement is approved subject to the following comment:

Consideration should be given to possible impacts to
Historic/Archeological properties in accordance with
P.L. 96-515, Section 110. This should be addressed
with submission of the supplement to the lease to SWD
for approval.

FOR THE COMMANDER:

Encl
wd



JERRY W. SMITH
Acting Director, Directorate
of Construction-Operations



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)

13 September 1991

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

SUBJECT: Supplement No. 5, Updated Master Plan Design
Memorandum No. 1-D, Nimrod Lake

1. This supplement is submitted to indicate the proposed expansion of the Plainview City Park on Nimrod Lake. The city of Plainview has requested that an additional 2.2 acres (200' X 485') be added to the existing city park lease. The requested area would be made available by reducing the size of the adjacent agricultural lease (DACW03-1-76-131) by a corresponding area. The existing parcel and requested expansion area is shown on the enclosed exhibit.
2. The facility, although built and operated by the citizens of Plainview, Arkansas, is open to the general public. It is well utilized. However, the small size of the park and uneven ground surfaces in the area now available have made the proposed placement of a baseball field difficult. The additional area will provide more suitable ground surfaces, requiring less fill and grading to accomplish placement of the field.
3. The reduction of the adjacent agricultural lease plot to make way for the proposed expansion of the city park will not significantly change the utility of the lease plot to the lessee. Approval of the supplement to the master plan is recommended.

FOR THE COMMANDER:

Encl (4 cys)

for *Glenn P. Risher*
KEITH THONEN
Chief, Construction-Operations
Division

CESWD-CO-RP (CESWL-CO-L/25 May 1989) (1130a) 1st End Mr. McCauley/
te/767-2434
SUBJECT: Nimrod Lake Updated Master Plan, Design Memorandum No. 1-D,
Supplement No. 4

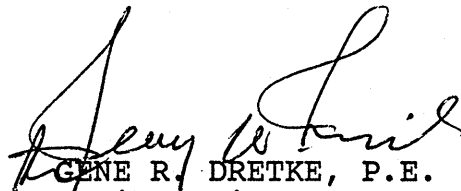
CDR, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75242-0216 12 JUN 1989

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

Approved.

FOR THE COMMANDER:

Encl
wd


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

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

REPRODUCED AT GOVERNMENT EXPENSE



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

REPLY TO
ATTENTION OF

MAY 25 1969

CESWL-CO-L (1130)

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

SUBJECT: Nimrod Lake Updated Master Plan, Design Memorandum No. 1-D,
Supplement No. 4

1. The purpose of this supplement is to identify the proposed relocated boat launching ramp site at County Line Park as shown on the enclosed Plate 9. The existing boat launching ramp is located between the swimming beach and the designated ski takeoff area, which results in the boats creating a safety hazard to visitors using the swimming and water skiing areas. Due to the topography, the parking area configuration must be long and narrow, causing parking congestion and conflicts between boaters and swimmers.
2. The proposed site for the ramp has been used in the past for a commercial boat dock concession. There are no plans to readvertise the concession lease, since the last two concessionaires have been unable to make a profit and have subsequently declared bankruptcy. If the demand for another concession arises, consideration will be given to advertising the concession in another location on the lake. This, however, depends upon the results of the required market analysis study. The former boat dock parking area is unused at the present time, but it would provide excellent parking facilities for the relocated launching ramp.
3. Approval of this supplement is recommended.

Encl (4 cys)

ANTHONY V. NIDA
Colonel, Corps of Engineers
Commanding

Dist
10 Mar 86

SWDCO-RP (SWLCO-L/4 Feb 86) 1st End
SUBJECT: Nimrod Lake Updated Master Plan, Design Memorandum
No. 1-D, Supplement No. 3

DA, Southwestern Division, Corps of Engineers, 1114 Commerce
Street, Dallas, TX 75242-0216 27 FEB 1986

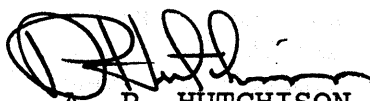
TO: Commander, Little Rock District, ATTN: SWLCO-L

Approved subject to the following comment:

The District should be assured that it is less expensive to
construct a new access road to Sunlight Bay Park than to raise
the existing road in place.

FOR THE COMMANDER:

Encl
wd



A. P. HUTCHISON
Chief, Construction-
Operations Division

CF (w/basic & encl):
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

4 FEB 1986

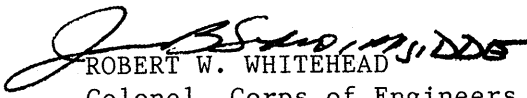
SWLCO-L

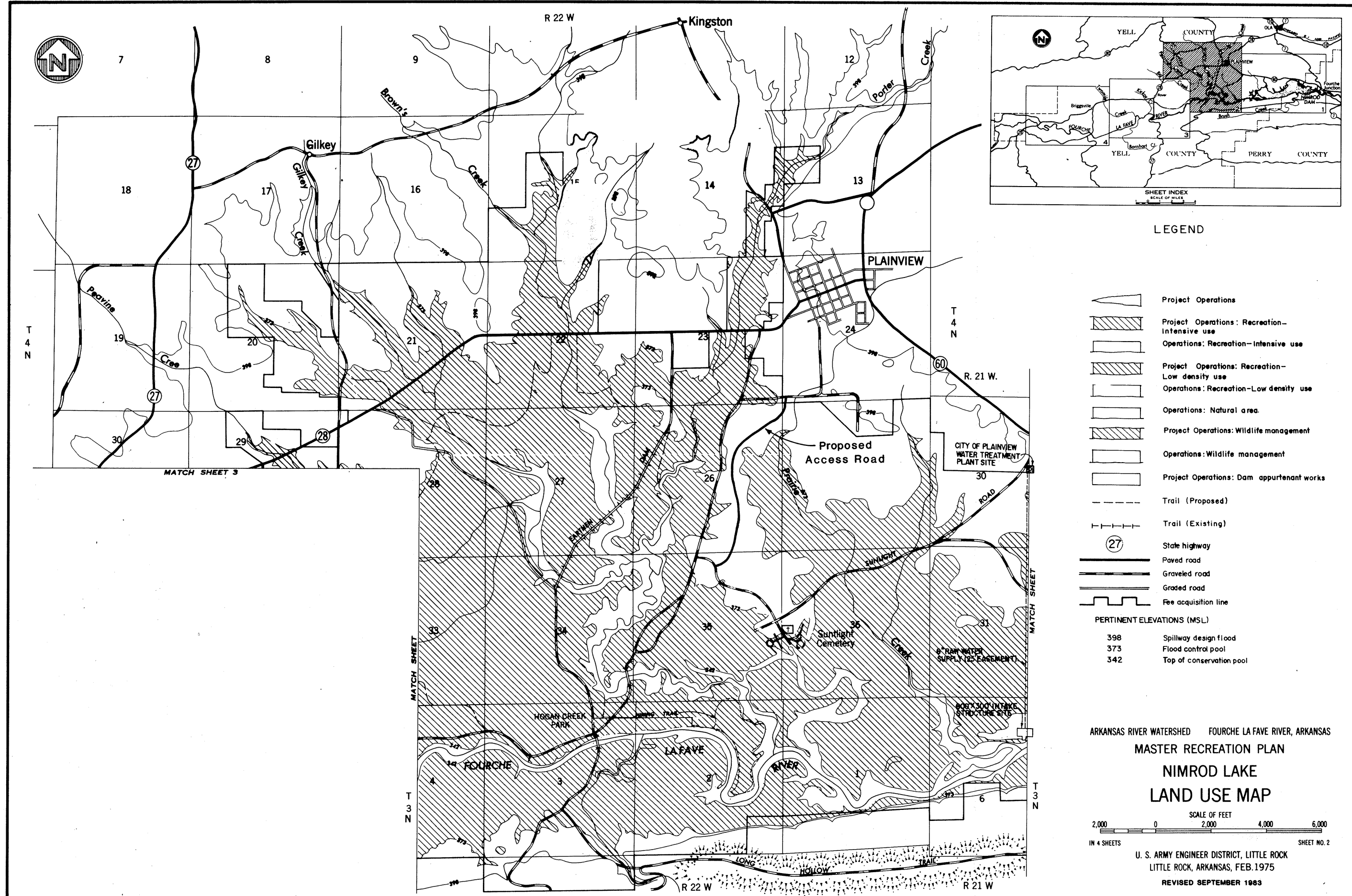
SUBJECT: Nimrod Lake Updated Master Plan, Design Memorandum No. 1-D,
Supplement No. 3

Commander, Southwestern Division
ATTN: SWDCO-R

1. The purpose of this supplement is to identify the location of a proposed new access road to Sunlight Bay Park. The access road to this park is inundated when the lake level exceeds 362 feet m.s.l. The existing road has been inundated approximately 5 percent of the time during the past 20 years; however, at those times the entire park and also the Sunlight Cemetery are cut off by high lake levels.
2. The proposed road which would be on Government land would be approximately 2 miles in length and 24 feet in width, compacted with 10 inches of SB-2 material, primed and paved with 1 1/2" asphaltic concrete with drainage as required. The cost is estimated at \$200,000.
3. Impact of road inundation includes isolation of the entire park and unavailability of facilities to the public as well as isolation of the Sunlight Cemetery at times when burials may be pending. The cemetery involvement is an emotional issue in the local area and has led citizens to submit a petition to us for assistance.
4. Approval of this supplement is recommended.

Encl (9 cys)
Plate No. 4 (Land Use Map)


ROBERT W. WHITEHEAD
Colonel, Corps of Engineers
Commanding



SWDCO-RP (SWLCO-L 26 Dec 84) 1st End

SUBJECT: Nimrod Lake, Updated Master Plan, D.M. 1-D, Supplement No. 2

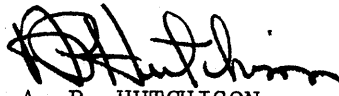
DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75242-0216 14 JANUARY 1985

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

Approved.

FOR THE COMMANDER:

wd all encls


A. P. HUTCHISON
Chief, Construction-
Operations Division

CF: w/encl

DAEN-CWO-R (4 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

26 December 1984

SUBJECT: Nimrod Lake, Updated Master Plan, D.M. 1-D, Supplement No. 2

Commander, Southwestern Division
ATTN: SWDCO-R

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

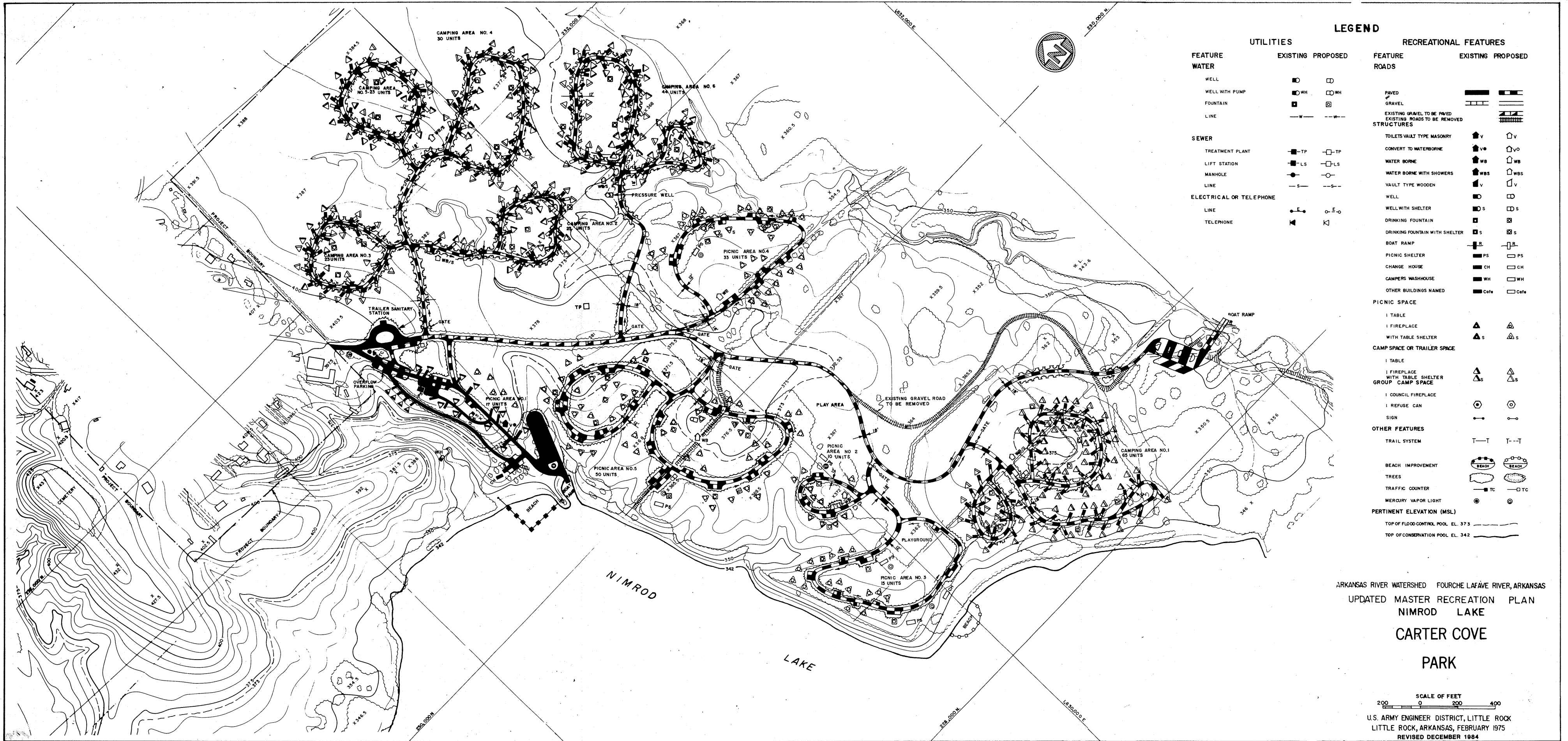
FOR THE COMMANDER:

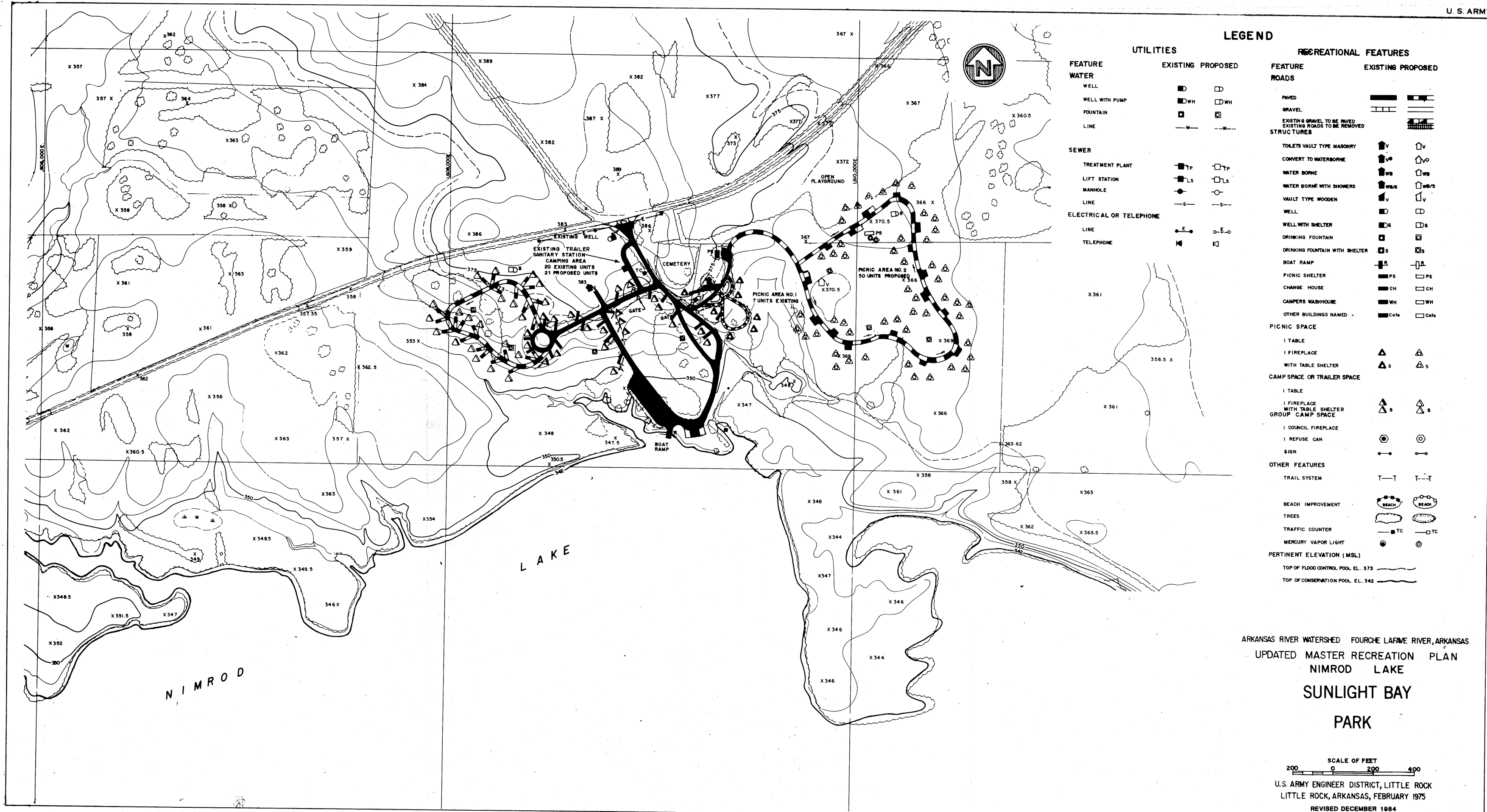
6 Incl (9 cys)
Plates 7-12

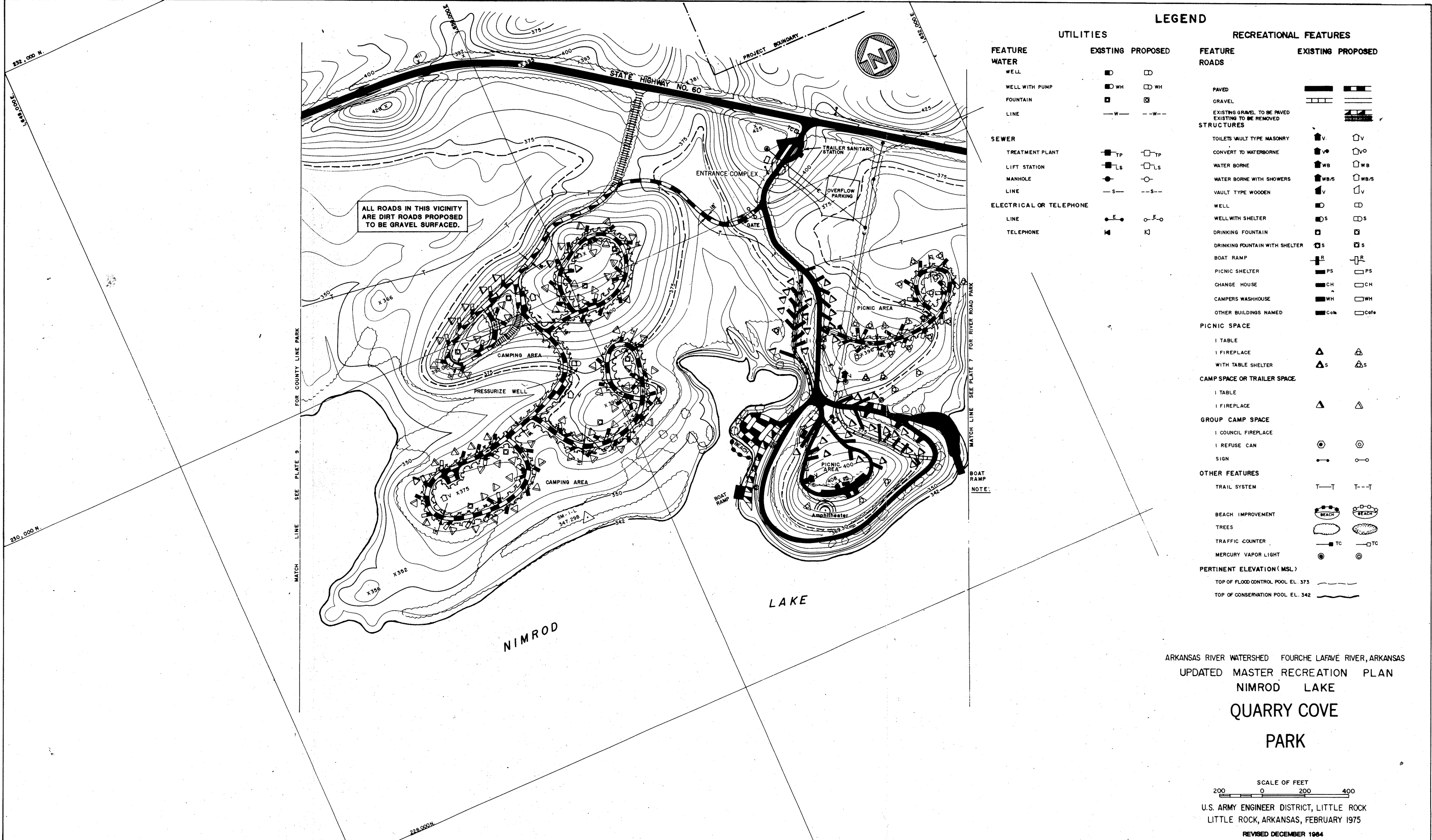
A handwritten signature in black ink, appearing to read "T. S. Cook", is written over the typed name.

T. S. COOK, P.E.
Chief, Construction-Operations
Division

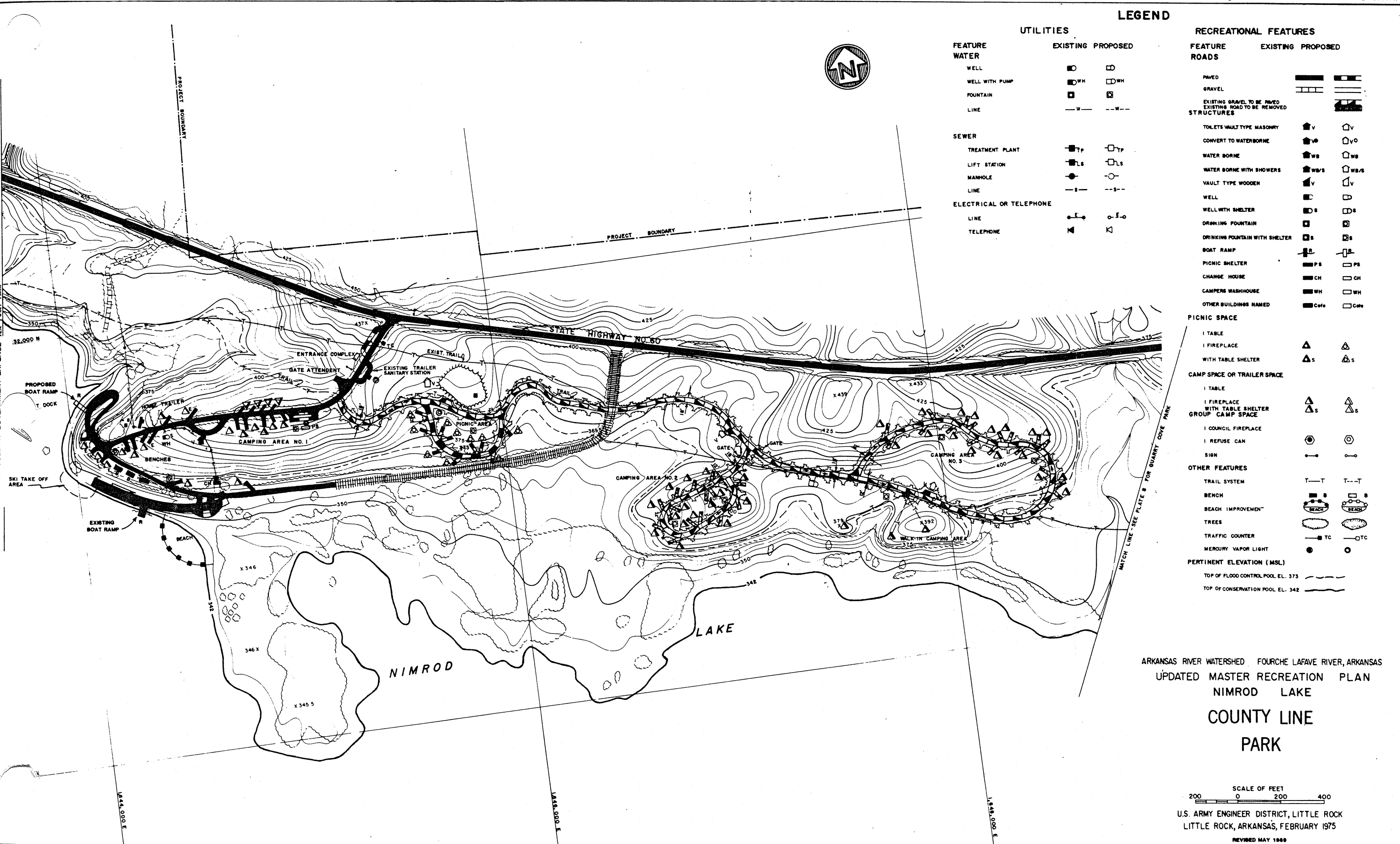










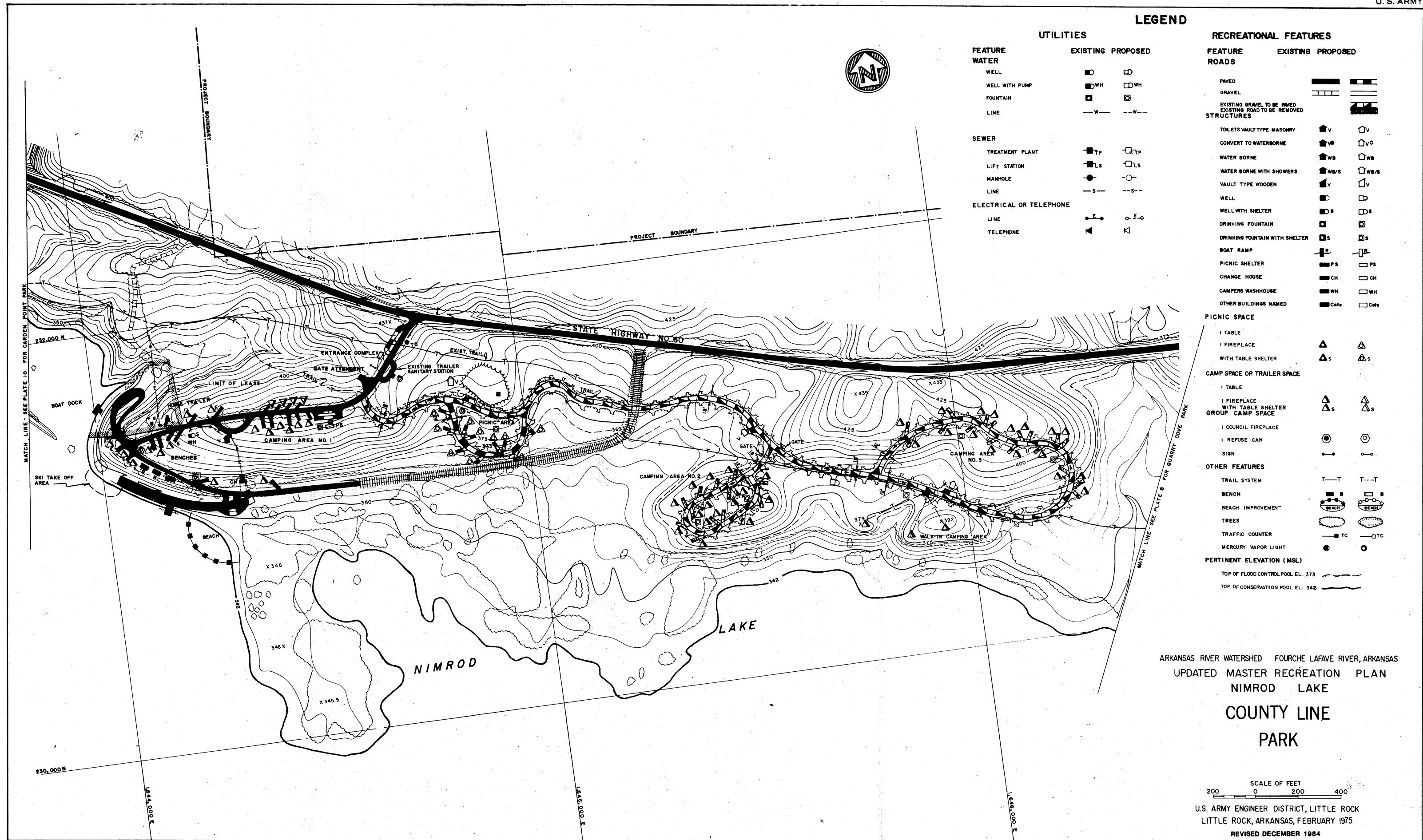


ARKANSAS RIVER WATERSHED FOURCHE LAFAYE RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
NIMROD LAKE
COUNTY LINE
PARK



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

REVISED MAY 1988



SWDCO-RP (30 Sep 83) 1st Ind
SUBJECT: Nimrod Lake, Updated Master Plan, D.M. No. 1-D, Supplement No. 1

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


9 NOV 1983

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

1. Reference SWDRE-M 3d Ind dated 10 Nov 83 to SWLRE-M letter dated 15 June 1983, subject: Nimrod Lake - Proposed Lease to the City of Plainview for Wastewater Treatment Facilities.
2. Since the Division Engineer has determined that the proposed lease is not in the best public interest (see referenced 3d Ind above), the subject supplement is returned without action.

FOR THE COMMANDER:

1 Incl
wd 1 cy


A. P. HUTCHISON
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:

SWLCO-L

30 September 1983

SUBJECT: Nimrod Lake, Updated Master Plan, D.M. No. 1-D, Supplement No. 1

Commander, Southwestern Division
ATTN: SWDCO-RP

1. The purpose of this supplement is to reallocate 80 acres of land from Operations: Recreation-Low Density Use to Project Operations: Municipal Wastewater Treatment as shown on the inclosed Plate 4 of the master plan. The city of Plainview, Arkansas, has requested a lease of 80 acres of Government land at Nimrod Lake for construction of wastewater treatment facilities. Plainview is a small, unsewered community in west central Arkansas. The city presently utilizes septic tank-absorption field systems for on-site wastewater treatment which malfunction due to unsatisfactory soil conditions. The malfunctioning septic tanks have created public health hazards, according to the Arkansas Department of Health. The Arkansas Department of Pollution Control and Ecology also reported that water samples taken from Porter Creek, which receives drainage from Plainview and subsequently flows into Nimrod Lake, showed some levels of total coliform bacteria. Plainview, therefore, proposes the construction of a complete wastewater collection system and a spray irrigation land application system.

2. Factors to consider in reviewing the impact of a land reallocation are listed below:

a. Wildlife Management. Present plans indicate that approximately 65 acres of the 80-acre tract proposed for the wastewater treatment facility would be fenced. This fencing and lease condition 34 would eliminate recreational use of the lands involved. No hunting would be permitted in, and possibly adjacent to, the proposed treatment facility. For this reason, a requirement to plant cover vegetation beneficial to wildlife would be of little value in increasing the overall wildlife carrying capacity of the project area.

b. Timber Management. There are two wooded areas on this 80-acre tract comprising some 21.5 acres of above average form merchantable timber valued at some \$17,500. This timber would be removed with the development of a wastewater treatment facility on this site. The resulting timber harvest would remove existing food, cover, and nesting sites; however, the overall effect on the project as a whole would be minimal.

30 September 1983

SUBJECT: Nimrod Lake, Updated Master Plan, D.M. No. 1-D, Supplement No. 1

c. Potential Pollution. The proposed treatment facility should eliminate the primary sources of fecal coliform bacteria and nitrogen and phosphorus nutrients into Nimrod Lake. Runoff from the 80-acre tract should have minimal impact on the recreational use of Nimrod Lake since the treatment plant will be located upstream of the nearest park, Sunlight Bay, by at least 3 miles. Septic tank effluent will be eliminated from road ditches in the city and from Porter Creek, a tributary of Nimrod Lake.

d. Land Allocation. The present land allocations for Nimrod Lake are as follows:

Operations: Recreation-Intensive Use	3,105 Acres
Operations: Recreation-Low Density Use	13,710 Acres
Operations: Natural Area	500 Acres
Operations: Wildlife Management	3,595 Acres
Project Operations	<u>3,930 Acres</u>

TOTAL	24,840 Acres
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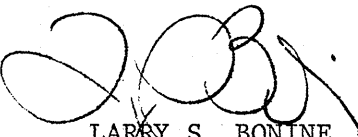
Reallocation of the 80 acres for the treatment plant will not significantly affect the balance of land use at Nimrod Lake.

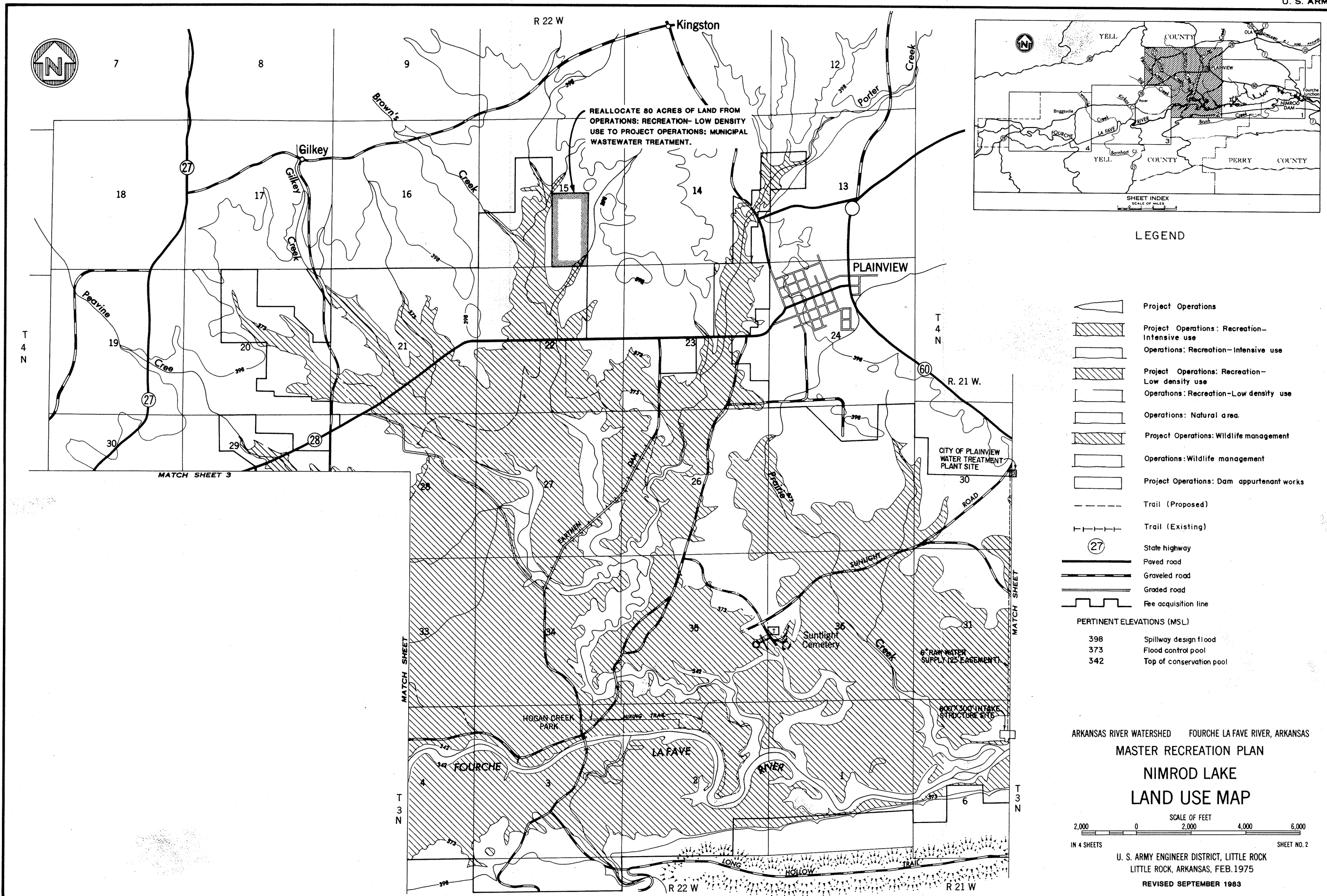
e. Present Use. The 80-acre tract is the northeast portion of a 386-acre lease plot. The land is rolling to level, mostly very brushy pasture and range land. There are no structural improvements of value. The soil is deep, gray silty loam of good to fair fertility. The lease plot generally has a fair base of bermuda, native grasses, and lespedeza in the pasture areas but is in generally poor condition and reverting to briars and brush. Because the land is isolated and vehicular access from Highway 28 is by dirt road and trail, little recreational use is being made of the land. Future public use of the land would be minimal, primarily for hunting small game. The master plan has sufficient other land designated for future intensive recreational use. Since the loss of this land will have little impact on recreational use or wildlife habitat, a public meeting was not conducted to discuss the proposal.

f. Permit Activity. Apparently, the only permit activity would be the sewerline crossing at Porter Creek which would be covered under a nationwide permit for purposes of Section 404, provided the conditions of that permit were complied with.

3. Approval of this supplement is recommended.

1 Incl (9 cys)
as


LARRY S. BONINE
Lieutenant Colonel, Corps of Engineers
Commanding



SWDCO-RM (8 Jul 83) 1st Ind

SUBJECT: Supplement 1 to Appendix D and the Project Master Plan for Nimrod Lake

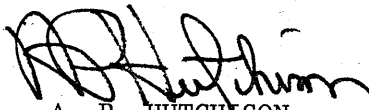
DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75242 23 AUG 1983

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

Supplement 1 to Appendix D and the Project Master Plan for Nimrod Lake is
approved.

FOR THE COMMANDER:

wd all incl


A. P. HUTCHISON
Chief, Construction-
Operations Division

CF: w/incl
DAEN-CWO-R (2 cys)



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

REPLY TO
ATTENTION OF:

SWLCO-L/SWLED-W

8 July 1983

SUBJECT: Supplement 1 to Appendix D and the Project Master Plan for
Nimrod Lake

Commander, Southwestern Division
ATTN: SWDCO-R/SWDED-R

1. References:

a. Letter SWDCO-R/SWDED-W dated 4 February 1981, subject: Manipulation of Pool Levels to Improve Fish and Wildlife Habitat.

b. First indorsement SWDCO-R dated 2 Dec 76, subject: Fish and Wildlife Management Plan, Appendix D, to Update Master Plan - Nimrod Lake.

2. The Arkansas Game and Fish Commission has requested a change in the annual water level control plan for Nimrod Lake to improve the reproductive success of early spawning fish. A copy of their letter is inclosed. Their proposal will not adversely affect the low water rule curve-mosquito control operation plan or significantly impact the flood control purpose of the lake. Cooperating with their request will require changing the water level control plan, the project master plan, and Appendix D to the project master plan in keeping with the directives received in reference a. The following revisions are submitted:

a. Water Control Plan. The change requested by the Arkansas Game and Fish Commission cannot be fully implemented because of a need to maintain the mosquito control aspect of the low water rule curve between 15 May and 15 June. However, a cursory review of the project's inflow/pool stage records indicates the start date for the raised pool portion of the low water rule curve can be moved to March without materially affecting the project's capability to meet its authorized flood control purpose. The proposed changes are reflected in the inclosed revised paragraphs 106-109 and Plate 33 of the Reservoir Regulation Manual for Nimrod Dam. Upon approval, these changes will be issued to all holders of the manual as a permanent change.

b. Project Master Plan for Nimrod Lake, Paragraph 2-05, Pool Fluctuation and Hydrology. The top of the flood-control pool is at elevation 373.0. Between March 1947 and April 1968, the low water rule curve-mosquito control operation plan called for the top of the conservation pool to be at elevation 342.0 on 1 October. This elevation was maintained between 1 October and 15 March at which time the lake was raised to elevation 343.5 and maintained at that level until 15 May. Over the next 4 months, the level was slowly

8 July 1983

SUBJECT: Supplement 1 to Appendix D and the Project Master Plan for
Nimrod Lake

lowered to elevation 342.0 by 1 October where it remained until the following May. The top of the conservation pool is 342.0 ft. m.s.l. from October to April. It is proposed that beginning on 1 March 1984, the low water curve-fisheries enhancement-mosquito control operation will be altered so that the conservation pool level on 15 March will be raised to elevation 345.0, remain at elevation 345.0 until 15 May, and then slowly lowered to elevation 342.0 by 1 October where it will remain until the following March. Actual lake elevations are dependent upon inflow and available channel capacity for flood-control releases. The maximum pool levels experienced were elevation 374.8 on 1 April 1945 and elevation 373.9 on 24 April 1973. The minimum pool elevation experienced was 327.5 in December 1960. This was the result of a drawdown for fish management. The stage hydrograph for the period January 1944 through December 1974 is shown on Plates 1 through 1-B. Since impoundment of water began at Nimrod Lake in 1942, the average annual pool fluctuation has been 19.5 feet. The maximum experienced fluctuation of 33 feet occurred in both 1945 and 1973. The Arkansas Game and Fish Commission will assess the effectiveness of the change in the water control program and furnish the LRD a copy of the results in their annual report of fisheries management actions. The Arkansas Game and Fish Commission occasionally requests a deviation to the water control plan for the purpose of fisheries renovation. The last major deviation was a fisheries management drawdown in 1978.

c. Appendix D to Project Master Plan, Paragraph 3-09, Lake Fluctuations.

The top of the flood-control pool is elevation 373.0 and the top of the conservation pool is elevation 342.0 m.s.l. The average annual pool fluctuation since impoundment in 1948 is 19.5 feet. Water level fluctuations associated with the project for its authorized purpose (of flood control) may result in some destruction of fish nests when severe fluctuations occur simultaneously with spawning periods. However, it should be noted that a carefully planned water level fluctuation can be beneficial to fish population. Water levels in the flood pool during the spawning season resulting in the inundation of terrestrial vegetation would provide fish with spawning sites and cover for newly hatched fry. To receive maximum benefits from lake level fluctuation, it would be necessary to hold the lake level high during the spawning season and for a few weeks thereafter. After this time, the lake would need to be drawn down to allow for terrestrial vegetation to become reestablished. At the request of the Arkansas Game and Fish Commission, a water level elevation increase of 3 feet has been moved up to be in effect between 15 March and 15 May of each year instead of 15 April and 15 May. Between 15 May and 1 October of each year, the water level will be slowly returned to the conservation pool level of 342.0 feet m.s.l.

8 July 1983

SUBJECT: Supplement 1 to Appendix D and the Project Master Plan for
Nimrod Lake

3. In accordance with reference b, the following changes have been made:

a. Appendix D, Page 18, Paragraph 4-04, Endangered Species. The Department of Interior, U.S. Fish and Wildlife Service, and the Arkansas Game and Fish Commission list the following species on the Endangered and Threatened Species List as possibly being found in the area of Nimrod Lake:

- (1) Bald Eagle (Haliaeetus leucocephalus), wintering area.
- (2) Ivory-billed Woodpecker (Campephilus principalis), believed extinct.
- (3) Ozark Big-eared Bat (Plecotus tonsendii ingens), fringe of range.
- (4) American Alligator (Alligator Mississippiensis), present in lake.

b. Appendix D, Page 19, Paragraph 5-04, Arkansas Game and Fish Commission. The Arkansas Game and Fish Commission is licensed to manage the 1,191-acre Norman Point Goose Area and the 2,400-acre Nimrod Public Duck Hunting Area. The Arkansas Game and Fish Commission also has a license to maintain a headquarters area and structure on 3.4 acres. The work accomplished during the previous year and the plans for work to be accomplished during the coming year are listed in the annual management plan of the Arkansas Game and Fish Commission under terms of the license agreement. These reports are staffed through the Nimrod-Blue Mountain Resident Office and the appropriate elements of the Little Rock District Office for review and comment. The waterfowl areas have small fields in conjunction with wooded areas. The fields are cultivated on a rotational basis, and lure crops are planted for waterfowl. Quail, rabbits, turkey, and deer also benefit from these crops. Plantings consist of mixtures of buckwheat, milo, millet, peas for spring, and wheat and clover during the fall. The Arkansas Game and Fish Commission, due to lack of personnel and funds, returned 48 food plots to Corps management in 1975. These areas were planted primarily for quail production. Since 1980, the Arkansas Game and Fish Commission has utilized cooperative farming agreements to provide food and habitat for indigenous and migratory wildlife.

c. Appendix D, Page 27, Paragraph, 10-02. Habitat improvement will be undertaken by Corps personnel who will plant adaptable tree and shrub species which are beneficial to wildlife. Separate plots will be planted and maintained by Corps personnel. Firelanes will be constructed and planted during the fall with cover crops to prevent erosion and provide food and cover for wildlife. Wildlife enhancement in parks will consist of planting flowering trees and shrubs, legumes and wildflowers, and placement of squirrel nesting boxes.

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

SUBJECT: Nimrod Lake, Fourche LaFave River, Arkansas, Design Memorandum
No. 1-D, Updated Master Plan for Development and Management
of Nimrod Lake


DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, TX 75202 19 DEC 1975

TO: District Engineer, Little Rock

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

FOR THE DIVISION ENGINEER:

1 Incl
nc


BARRY G. ROUGHT
Chief, Planning Division

CF:
DAEN-CWO-R (dupe)

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

SUBJECT: Transmittal of Master Plan for Nimrod Lake, Fourche LaFave River,
Arkansas

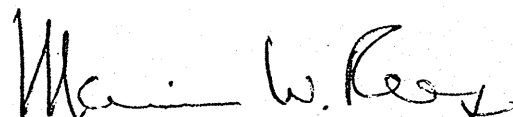
DA, Office of the Chief of Engineers, Washington, D.C. 20314 3 December 1975

TO: Division Engineer, Southwestern
ATTN: SWDPL-R

1. The subject Master Plan for Nimrod Lake is approved subject to Division comments and the following:

Location of the proposed sewage treatment plant shown on Plate 11 should be reconsidered. The facility could become quite foul smelling and should be located in a more isolated area. Also there is insufficient information presented to properly evaluate the water and wastewater systems.

FOR THE CHIEF OF ENGINEERS:



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

1 Incl
1. w/d
2. nc



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



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

REPLY TO
ATTENTION OF

SWLED-PV

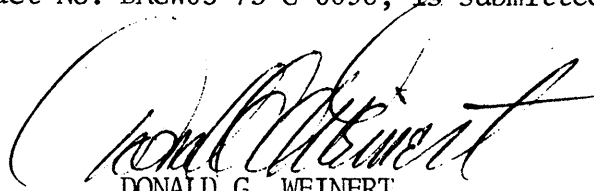
2 April 1975

SUBJECT: Nimrod Lake, Fourche LaFave River, Arkansas, Design
Memorandum No. 1-D, Updated Master Plan for Development
and Management of Nimrod Lake

Division Engineer, Southwestern

Design Memorandum No. 1-D, 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


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UPDATED MASTER PLAN FOR DEVELOPMENT
AND MANAGEMENT OF NIMROD LAKE

TABLE OF CONTENTS

<u>Paragraph No.</u>	<u>Title</u>	<u>Page No.</u>
SECTION I - INTRODUCTION		
1-01	Project authorization	1-1
1-02	Purpose and scope of report	1-1
1-03	Application of public laws	1-1
1-04	Status of the project	1-2
SECTION II - PROJECT DESCRIPTION		
2-01	Location	2-1
2-02	Accessibility	2-1
2-03	Description of the project area	2-1
2-04	Engineering features of the project	2-2
2-05	Pool fluctuation and hydrology	2-3
2-06	Clearing	2-4
2-07	Chronology of expenditures	2-4
SECTION III RECREATIONAL AND ENVIRONMENTAL RESOURCES OF THE PROJECT AREA		
3-01	General	3-1
3-02	Lake and surrounding area	3-1
3-03	Soils	3-1
3-04	Physiography	3-4
3-05	Water characteristics	3-4
3-06	Health conditions	3-5
3-07	Climate	3-6
3-08	Vegetation	3-6
3-09	Fish and Wildlife management	3-7
3-10	Recreation	3-8
3-11	Historic resources	3-9
3-12	Archaeological resources	3-10
SECTION IV - FACTORS INFLUENCING RECREATION DEVELOPMENT		
4-01	Region served	4-1
4-02	Competing recreational areas and visitation	4-1
4-03	Determination of present recreational use	4-2
4-04	Basis for estimating future recreational use	4-5
4-05	Development of population and per capita personal income projections	4-5
4-06	Projected Recreational Use	4-6
4-07	Comparison of Projections	4-7
4-08	Facility Supply Capacity	4-7

TABLE OF CONTENTS
PAGE 2.

<u>Paragraph No.</u>	<u>Title</u>	<u>Page No.</u>
SECTION IV - Cont'd		
4-09	Water Area Capacity	4-8
4-10	Land Area Capacity	4-8
4-11	Facilities Required	4-9
4-12	Interpretive Development	4-10
4-13	Handicapped Use	4-11
SECTION V - GENERAL DEVELOPMENT PROGRAM		
5-01	General description of plan	5-1
5-02	Basis of selecting areas	5-1
5-03	Group Use	5-1
SECTION VI - LAND USE		
6-01	General	6-1
6-02	Allocation of lands	6-1
SECTION VII - PLAN OF DEVELOPMENT		
7-01	General	7-1
7-02	Existing areas recommended for improvement in this plan	7-1
7-03	Interpretive program	7-6
7-04	Areas recommended for future development	7-6
7-05	Trail construction	7-7
SECTION XIII - COORDINATION WITH OTHER AGENCIES		
8-01	Original coordination	8-1
8-02	Subsequent coordination	8-1
8-03	Current coordination	8-1
	Arkansas Department of Pollution Control and Ecology	
	Arkansas Archeological Survey	
	Arkansas Department of Planning	
	U. S. Department of the Interior, Fish and Wildlife Service	
	Arkansas Department of Health	
	U. S. Department of Agriculture, Forest Service	
	Arkansas Department of Parks and Tourism	
	Arkansas Game and Fish Commission	
SECTION IX - JUSTIFICATION FOR DEVELOPMENT		
9-01	Benefits and economic value	9-1

TABLE OF CONTENTS

PAGE 3.

<u>Paragraph No.</u>	<u>Title</u>	<u>Page No.</u>
SECTION X - ADMINISTRATION AND MANAGEMENT		
10-1	Policies	10-1
10-2	Administration	10-1
10-3	Management	10-1
10-4	Monumentation	10-1
SECTION XI - COST ESTIMATE		
11-01	Summary of estimated costs	11-1
11-02	Cost sharing policy	11-1
11-03	Facility costs	11-1
SECTION XII - PROJECT RESOURCE MANAGEMENT		
12-01	General	12-1
12-02	Staffing and Organization	12-1
12-03	Administrative and Maintenance	12-1
12-04	Law Enforcement	12-1
12-05	Safety	12-2
12-06	Concession Activities	12-2
SECTION XIII - FOREST MANAGEMENT		
13-01	General	13-1
13-02	Objective and Policy	13-1
13-03	Physical and Ecological Resources and Characteristics	13-1
13-04	Treatments and Programs	13-1
13-05	Personnel and Fiscal Requirements	13-2
13-06	Work Plans	13-2
13-07	Resource Management	13-2
13-08	Facilities	13-2
SECTION XIV - FIRE PROTECTION		
14-01	General	14-1
14-02	Cooperative Agreements	14-1
14-03	Training	14-1
14-04	Equipment	14-1
14-05	Prevention, Presuppression and Suppression Activities	14-1
SECTION XV - FISH AND WILDLIFE MANAGEMENT		
15-01	General	15-1
15-02	Aquatic	15-1
15-03	Terrestrial	15-1

TABLE OF CONTENTS
PAGE 4

<u>Paragraph No.</u>	<u>Title</u>	<u>Page No.</u>
SECTION XVI - PROJECT SAFETY		
16-01	General	16-1
16-02	General Program Guidelines	16-1
16-03	General Public	16-1
16-04	Employee	16-1

SECTION XVII - CONCLUSIONS AND RECOMMENDATIONS

17-01	Conclusions	17-1
17-02	Recommendations	17-1

SECTION XVIII

PLATES

18-01 Index of plates. The numbers and titles of plates included in this master plan are shown in the following tabulations:

<u>Plate No.</u>	<u>Title</u>
1,1A & 1B	Experienced Lake Levels
2	Regional Recreation Areas
3 thru 6	Land Use Maps
7	River Road Park - Project Point Park 1 of 2
7A	River Road Park - Project Point Park 2 of 2
7B	River Road Park - Project Point Park Photomap 1 of 2
7C	River Road Park - Project Point Park Photomap 2 of 2
8	Quarry Cove Park
8A	Quarry Cove Park Photomap
9	County Line Park
9A	County Line Park Photomap
10	Carden Point Park
10A	Carden Point Park Photomap
11	Carter Cove Park
11A	Carter Cove Park Photomap
12	Sunlight Bay Park
12A	Sunlight Bay Park Photomap
13	Plainview City Park
13A	Plainview City Park Photomap

TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page No.</u>
2-1	Engineering Data	2-2
4-1	Visitation to Nimrod Lake	4-1
4-2	1969 Participation Rates-Expressed In Activity Occasions Per Visit-Nimrod Lake	4-3
4-3	Activity Occasions Generated at Nimrod Lake- 1973	4-4
4-4	Polulation and Income Projections For the Zone of Influence - Nimrod Lake	4-5
4-5	Projected Normal Summer Weekend Day Use of Nimrod Lake Expressed In Activity Occasions	4-6
4-6	Recreation Needs Shown In The Arkansas Statewide Comprehensive Outdoor Recreation Plan - 1974 - Nimrod Lake Zone of Influence	4-7
4-7	Comparison of Existing Facilities with Calculated Facility Requirements - 1973	4-9
4-8	Estimated Facility Requirements for Future Recreational Use of Nimrod Lake	4-10
11-1	Summary of Estimated Cost for Additional Recreational Facilities by Parks	11-2
11-2	Detailed Estimate of Cost for Additional Recreational Facilities - Summary	11-3
11-3	Detailed Estimate of Cost for Additional Recreational Facilities	11-6

NIMROD LAKE
PREVIOUSLY ISSUED AND CURRENTLY SCHEDULED DESIGN MEMORANDUMS

<u>Memo No.</u>	<u>Subject</u>	<u>Submitted or scheduled</u>	<u>Date approved</u>
-	The Nimrod Plan - Recreational Facilities at Nimrod Lake, Arkansas	-	Apr 46
-	The Nimrod Plan - Recreational Facilities at Nimrod Lake, Arkansas - Revised December 1951	19 Dec 51	27 May 52
1-C	Updated Master Plan for Reservoir Development and Management	23 Jun 64	10 Mar 66
1-D	Updated Master Plan for Development and Management of Nimrod Lake	Feb 75	

NIMROD

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	Dec 74	
D	Fish & Wildlife Management Plan	Jul 75	
E	Project Safety Plan	Dec 72	Jun 73

NIMROD LAKE
FOURCHE LA FAVE RIVER
ARKANSAS

UPDATED MASTER PLAN FOR
DEVELOPMENT AND MANAGEMENT FOR
NIMROD LAKE

SECTION I

INTRODUCTION

1-01. Project authorization. The project was authorized by the Flood Control Act approved 28 June 1938, (Public Law No. 761, 75th Congress, 3rd Session) which was later modified by the Flood Control Act approved 18 August 1941, (Public Law No. 228, 77th Congress, 1st Session) to include authorization of the project for flood control and generation of hydroelectric power.

1-02. Purpose and scope of report. This report updates Design Memorandum, No. 1-C, for Nimrod Dam and Reservoir approved 10 March 1966. This updated plan provided for an orderly, progressive development of the project and changes in 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-C.

1-03. Application of public laws.

a. General. Section 4 of the Flood Control Act approved 22 December 1944 as amended by Section 4 of the Flood Control Act approved 24 July 1946, as amended by Section 209 of the Flood Control Act approved 3 September 1954 (Public Law No. 780, 83rd Congress), as amended by Section 207 of the Flood Control Act of 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, authorized the Department of the Army to provide for recreational use of the lakes under its control.

b. Implementation of Department of the Army Policy subsequent to Public Law 89-72. Recreational development after FY 1974 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 put in place to recover all operation and maintenance costs.

1-04. Status of the project. Construction of the dam and appurtenant works was initiated in April, 1940. The dam was completed in March, 1942, and the project placed in operation for flood control about two months later. A Master Plan for recreational development and reservoir management was prepared in April, 1946, and initially updated in March 1966. Construction of the project for its primary purpose of flood control has been completed. After 32 years of operation, the lake has regulated 212 floods Crest stages in the Fourche La Fave River at Aplin, 13.7 miles downstream, have been reduced an average of 7.5 feet. Flooding was prevented on an average of 4,020 acres of improved land for each flood. The accumulated flood losses prevented are estimated at \$3,495,000 through June 1974.

SECTION II

PROJECT DESCRIPTION

2-01. Location. Nimrod Dam is located on the Fourche La Fave River in the western part of Perry County, Arkansas, about 29 miles south of Russellville, Arkansas, 8 miles southeast of Plainview, Arkansas, and 4 miles west of the village of Nimrod, from whence it derives its name. It is about 62 river miles upstream from the confluence of the Fourche La Fave and Arkansas Rivers. The entire project area is located in the Ouachita Mountains of west central Arkansas near the northern boundary of the Fourche subdivision of the Ouachita uplift. The lake area embraces portions of Perry and Yell Counties, Arkansas, the dam being about 2 miles downstream from the boundary line between the two counties.

2-02. Accessibility. The east, west and north boundaries of the lake area are adequately served by roads and highways. The south boundary is less accessible. All of the existing roads from the south are partially inundated by high stages of the lake. Highway 27 has been relocated to cross the lake on a fill about 5 miles from its upper limits and is bituminous surfaced. The region is served from the east principally by State Highways Nos. 10 and 60. Principal roads serving the area from the north and south are State Highways No. 7 and 27. The area is also served by the main line of the Chicago, Rock Island and Pacific Railroads between Little Rock, Arkansas, and Oklahoma City, Oklahoma, which passes through Ola, Arkansas, located on State Highway 10 about 5 miles north of the lake. Highway No. 10 is a hard-surfaced highway between Little Rock and Fort Smith. Highway No. 60 is hard-surfaced and borders the north boundary from Plainview to the dam. Most of the connecting and access roads into the parks are either gravel or bituminous surfaced. The locations of these roads are shown on Plates 3 through 6.

2-03. Description of the project area. Nimrod Lake is located adjacent to the Ouachita National Forest. Approximately 32 miles of the north boundary of this vast tract of Federally-owned forest land is formed by the Fourche La Fave River and Nimrod Lake. The river has a total drainage area of 1,117 square miles of which 680 square miles are upstream from the dam. The region is rugged and wooded and is characterized by a series of roughly parallel mountains with flat ridges separated by deep, narrow valleys. The south shoreline of the lake is generally steep and unbroken by coves. The

north shoreline is irregular and is indented by numerous coves. The flood plain for the most part lies along the north bank and is subject to horizontal fluctuation.

A total of 24,840 acres of land were acquired in fee for the project. Of the total area, 3,550 acres lie below elevation 342, the top of the conservation pool, and are subject to almost constant inundation and 14,715 acres lie between that elevation and elevation 373, the top of the present flood-control pool, and are inundated to a varying extent at infrequent intervals during the operation of the lake for flood control. The remaining 6,575 acres, except for a small area which is downstream from the dam, are above the elevation of the top of the present flood-control pool. The ultimate flood-control plan of development for Nimrod Lake, based on flood-control pool with a top elevation at 387, would necessitate the acquisition of considerable additional land. The area of the pool at elevation 387 would be 26,000 acres. The Government-owned land above the top of the present flood-control pool consists of an irregular-shaped strip varying in width from a few feet to a quarter of a mile, and was acquired in a manner to avoid severance and isolation of parcels of privately-owned property.

2-04. Engineering features of the project. The dam is a straight concrete gravity-type structure with a crest length of 1,012 feet and a maximum height of 97 feet. A 22-foot wide roadway extends across the top of the dam. The spillway section is located across the natural stream channel and is flanked on both sides with non-overflow sections extending to the abutments. Seven gate-controlled conduits through the base of the dam provide for the regulated release of flood waters. In addition, there are two conduits with 60 inch Howell-Bunger valves installed in their discharge ends which provide low flow discharge regulation of the lake level. Two penstocks 15 feet in diameter and sealed for the present with reinforced concrete bulkheads are provided for possible future generation of hydroelectric power. Provisions were made in the design and construction of the dam for the future installation of seven radial crest gates, 14 feet high each, above the spillway crest.

TABLE 2-1
ENGINEERING DATA

Dam:

Crest length, feet	1,012
Height of dam (roadway above streambed, feet)	97
Width of road on top of dam, feet	22
Volume of concrete in dam, cubic yards	104,400
Elevation, top of dam (roadway) feet above m.s.l.	400

Spillway:

Length of spillway, feet	198
Elevation spillway crest, feet above m.s.l.	373

Control Works:

Number of 6' x 7.5' conduits through base of dam	7
Number of 5' x 5' conduits through base of dam	2

Lake:

Top of flood-control pool, elevation 373	
Surface area, acres	18,300
Storage capacity of reservoir, acre-feet	336,000
Length of shoreline, miles	124

Top of future flood-control pool, elevation 387	
Surface area, acres	26,600
Storage capacity of reservoir, acre-feet	650,000

Top of conservation pool, elevation 342	
Surface area, acres	3,550 ✓
Storage capacity of reservoir, acre-feet	29,000
Length of shoreline, miles	77

2-05. Pool fluctuation and hydrology. The top of the flood-control pool is at elevation 373.0. Between March 1947, and April 1968, the low water rule curve-mosquito control operation plan called for the top of the conservation pool to be at elevation 342.0 (on 1 October). This elevation was maintained between 1 October and 15 March at which time the lake was raised to elevation 343.5 and maintained at that level until 15 May. Over the next four months, the level was slowly lowered to elevation 340.5, at which time it was raised back to elevation 342.0. After April 1968, the low water rule curve-mosquito-control operation plan was changed such that the conservation pool level on 1 May was raised to elevation 345.0, remained at elevation 345.0 until 15 May, and then was slowly lowered to elevation 342.0 by 1 October where it remained until the following May. The top of the conservation pool is 342.0 ft. m.s.l. from October to April. Lake elevations are dependent upon inflow and available channel capacity for flood-control releases. The maximum pool levels experienced were elevation 374.8 on 1 April 1945 and elevation 373.9 on 24 April 1973. The minimum pool elevation experienced was 327.5 in December, 1960. This was the result of a draw-down for fish management. The stage hydrograph for the period January, 1944, through December 1974, is shown on Plates 1 through 1-B. Since

impoundment of water began at Nimrod Lake in 1942, the average annual pool fluctuation has been 19.5 feet. The maximum experienced fluctuation of 33 feet occurred in both 1945 and 1973.

2-06. Clearing. All timber growth was removed from the land below elevation 348 which is six feet above the top of the original conservation pool.

2-07. Chronology of expenditures.

a. General funds. A total of \$136,000 of Construction General Funds were allocated to the Nimrod Lake project for the initial development of recreational resources. Since completion of initial development in FY 1959 a total of \$216,000 additional recreational funds (code 711) have been allocated for further development of recreational facilities at the Nimrod Lake project. All funds allocated for recreation were obligated for construction contracts and expended by FY 1973.

b. Cost-sharing.

(1) Administration policy as set forth in EC 1130-2-138, dated 31 May 1974, requires that further development of existing or future recreational facilities, after FY 1974, will be subject to cost-sharing with a non-federal body which agrees to assume operation and maintenance of the recreation area upon completion of development. The Corps, if a non-federal cost-sharing partner cannot be obtained, may develop urgently needed sanitary facilities to comply with state and Federal Laws, and upgrade existing recreation areas to a level where recreation use fees will offset operation and maintenance cost.

(2) A cost-sharing contract with the City of Plainview, Arkansas, for the development of a City Park has been negotiated and construction is scheduled to be initiated in FY 1975 and completed early in FY 1976. The total cost of the proposed development is \$78,000 and consists of 0.25 miles of gravel road, 14 gravel parking spaces, 8 picnic units, 1 vault restroom, 1 group picnic shelter, playground equipment, and 1 all purpose slab. The Government will design, award a contract, and administer construction of the facilities. The City will repay 50% of the total cost in annual payments not to exceed 50 years.

SECTION III

RECREATIONAL AND ENVIRONMENTAL RESOURCES OF THE PROJECT AREA

3-01. General. The region in which Nimrod Lake is located affords excellent opportunity for outdoor recreational activity. Popularity of the Lake is based primarily on its favorable climate and long season for outdoor recreation, principally sightseeing, picnicking, camping, fishing, boating, swimming and hunting. Over 514,000 visitors participated in these recreational activities at Nimrod Lake during 1973.

3-02. Lake and surrounding area. At the top of the conservation pool elevation 342, the lake has a shoreline of 77 miles with a surface area of 3,550 acres. At the top of the flood-control pool elevation 373, it has a shoreline of 124 miles with a surface area of 18,300 acres and a storage capacity of 336,000 acre-feet. Nimrod Lake is located in the Ouachita Mountain range of west central Arkansas. The Ouachita Mountains are the only mountain range in North America which orient in an east-west direction. The mountains are composed of long, flat ridges, and the average height is 1,800 m.s.l. Arkansas State Highway 7 runs along the eastern end of the lake. This highway is considered one of the most scenic in the State. The Ouachita National Forest which fronts directly upon the southern boundary of the project insures the area of lasting scenic quality. The northern portion of the project area is relatively level and some areas are suitable for raising crops and grazing cattle. The terrain of the southern portion of the project is very steep and rugged. The mass of this area is covered with dense vegetation and very little is suited for agricultural uses.

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

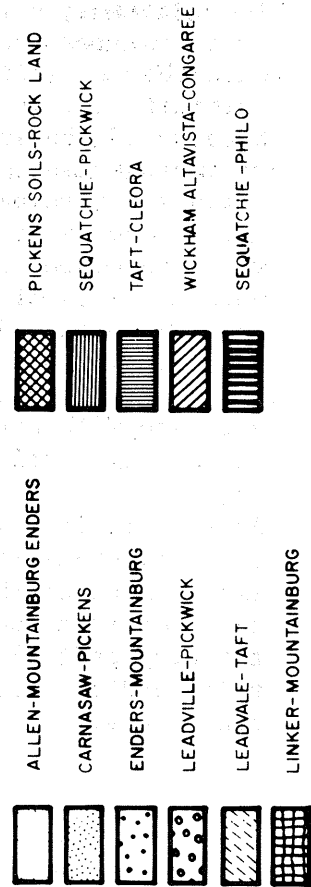
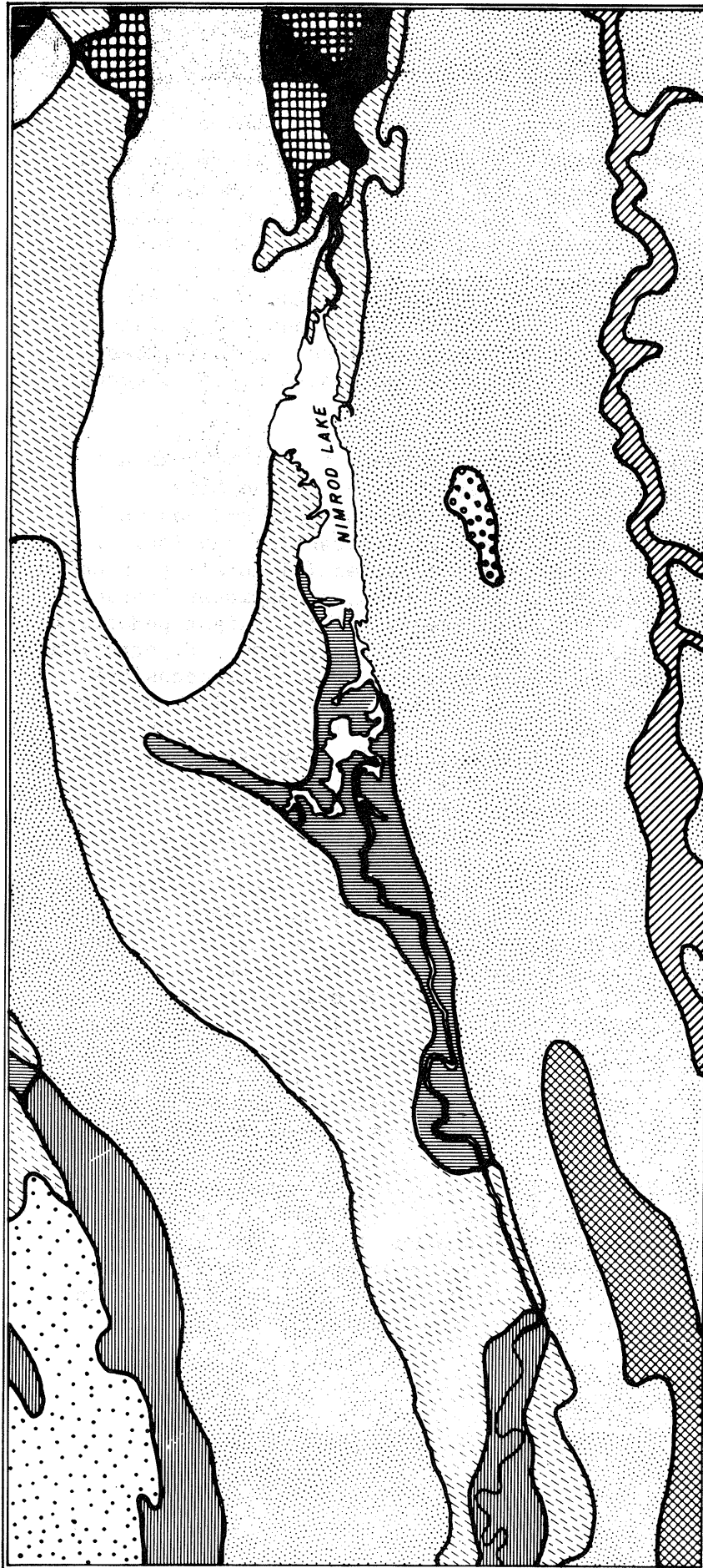
a. Carnasaw-Pickens. This soil association is found along the major portion of the south shore of the lake. It is moderately deep to shallow, slowly to moderately permeable, well to somewhat excessively drained, acid, gravelly and stony, loamy on rolling to steep hillsides and ridges. Carnasaw 50%, Pickens 30%, and a combination of Sherwood, Braddock, Congaree, Tate, and Wickham 20%. The well drained Carnasaw soils have dark grayish-brown silt loam or gravelly silt loam surface soil over yellowish-red or red silty clay or clay subsoil. They are about 2 to 5 feet thick over folded or fractured shale and sandstone bedrock. The somewhat excessively drained Pickens soils are less than 20 inches thick over steeply inclined, fractured shale and sand-

stone. They have dark grayish-brown gravelly or stony silt loam surface soil over strong brown or yellowish-brown gravelly or stony silt loam or silty clay loam subsoil.

b. Leadvale-Taft. This association is located on both sides of the lake at the dam extending upstream about 1.5 miles, and along a two-mile portion of the shoreline about midway on the north side of the lake. These soils are deep, moderately well to somewhat poorly drained, moderately slowly to slowly permeable, acid, loamy in level to gently sloping valleys. Leadvale 65%, Taft 20%, with a combination of Cane and Guthrie 15%. The moderately well drained Leadvale soils have 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, 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, silty clay loam fragipan.

c. Allen-Mountainburg-Enders. This association is located along approximately 2 miles of shoreline on the north side of the lake a short way upstream from the dam. The soils vary from deep to shallow, are well drained, rapidly to very slowly permeable, acid, loamy, gravelly or stony, and are found on steep mountainsides and moderately sloping benches. Allen 40%, Mountainburg 20%, Enders 20%, with a combination of Cane, Holston, Linker, Montevallo, and Cleora soils, and Rock land 20%. Allen soils have dark brown or grayish-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. Enders soils have grayish brown sandy loam surface soil over yellowish-red or red clay subsoil that is mottled gray in the lower part.

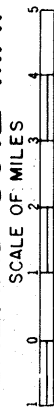
d. Taft-Cleora. This association is found at the upstream end of the lake and along several miles of the stream portion of the project. The soils are deep, somewhat poorly to well drained, slowly to moderately permeable, acid, loamy on level to nearly level flood plains. Taft 40%, Cleora 30%, and a combination of Guthrie, Leadvale, and Sequatchie 30%. The somewhat poorly drained Taft soils have grayish-brown silt loam surface soil over gray and brown, mottled silty clay loam upper subsoil. Beginning at a depth of 20 to 36 inches is a grayish-brown and gray mottled silty clay loam fragipan. The well drained Cleora soils have dark brown fine sandy loam surface soil overlying brown or dark brown fine sandy loam.



ARKANSAS RIVER WATERSHED FOURCHE LA FAVE RIVER ARKANSAS

UPDATED MASTER RECREATION PLAN

NIMROD LAKE GENERAL SOIL MAP



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

3-04. Physiography. Nimrod Lake is situated in the extreme northern portion of the structurally complex Frontal Quachita Mountain sub-province on the 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.

3-05. Water characteristics. Tributary streams to Nimrod Lake are generally short and less than five miles in length. The City of Plainview is located on the north shore of Nimrod Lake and has no public sanitary sewers. Nimrod Lake has no substantial chemical or bacteriological pollution problems although potential localized problem areas near municipalities are monitored by Corps of Engineers personnel three times a year. Nimrod 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 colloidal 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 Nimrod Lake three drawdowns have been carried out; 1955-56, 1956-57 and 1960-61. 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. A continuation of these efforts in a more intensive and drastic form 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 25 tons of rye grass. Four months later, almost the entire exposed lake bed had a dense growth of rye grass.

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 turbid conditions.

3-06. Health conditions. The general health conditions of the area are good. Malaria was endemic in Yell and Perry Counties prior to impoundment. Vector control consists of chemical treatment in small quantities, and drawing the lake down during low flow periods. This is a very effective method of mosquito control.

a. Disposal of solid waste. The volume of solid waste from the parks 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 several years. The solid waste generated by visitors is disposed of daily during the summer months and less frequently during the winter season. During 1973 at Nimrod Lake an estimated 208,000 pounds of solid waste were generated requiring disposal. All solid waste from the parks is taken to sanitary landfills on Government land, operated by the Corps of Engineers in compliance with State of Arkansas 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. Continuing monitoring of the sanitary landfill is conducted by Corps of Engineers personnel two times a year. Although there are over 25 public roadways at Nimrod Lake leading to the lake shore, dumping on Government-owned land is not a major problem. The landfill consists of cutting a trench in the earth and placing the solid wastes 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 of 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 a 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 not stabilize to the extent where facilities can be built without danger of foundation failure. The filled areas will be revegetated and returned to their natural state.

b. Disposal of sewage. The existing parks at Nimrod 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 were discharged into the Ola, Arkansas, sewage treatment facilities which are State approved and provide secondary treatment. In December 1973, a

total of 1,500 gallons of waste from vault toilets was disposed at the treatment facilities. 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. Waste from the residences and the waterborne toilet at Nimrod is disposed of through septic tanks and absorption fields. A sewage treatment plant is proposed for development at Carter Cove Park as shown on Plate 11.

3-07. Climate. Nimrod Lake is located in a humid region in which precipitation is rather evenly distributed throughout the year. 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 remaining on the ground for only short periods of time. The average annual temperature in the vicinity of the lake is approximately 61 degrees Fahrenheit. The maximum and minimum temperatures recorded at United States Weather Bureau Station, Danville, Arkansas, were 113 degrees and 11 degrees below zero Fahrenheit, respectively. The average frost-free period is 220 days. The average date the last killing frost occurs in the spring is 30 March, and the average date the first killing frost occurs in the fall is 1 November.

3-08. Vegetation. Forest vegetation surrounding Nimrod Lake is the result of an ecological transition caused by the presence of man. Heavy cutting, clearing and repeated wild fires have altered the character of the forest which originally was rich in a variety of species especially along streams and on lower slopes. Construction of the dam plus the aforementioned factors have led to a situation where reforestation has usually resulted by natural pioneer species.

Today, abundant quantities of Shortleaf Pine (Pinus echinata) are prevalent on the dry, rocky, acid soil of south facing slopes and ridge tops. This species readily invades productive hardwood areas and is frequently found intermixed with upland oaks. White Oak (Quercus alba) is seldom found over wide areas and generally occurs in clumps or in association with other hardwoods. White Oak occupies deep, well-drained soil where the degree of slope is not excessive, generally those with north and east exposures. Northern Red Oak (Quercus rubra), Black Oak (Quercus velutina), Cherry Bark Oak (Quercus falcata), Hickory (Carya Sp.) and Sweet Gum (Liquidambar styraciflua) are frequently intermixed with the White Oak. Black Gum (Nyssa sylvatica), Cottonwood (Populus deltoides), Willow (Salix nigra), Ash (Fraxinus Sp.), Elm (Ulmus Sp.) Hackberry (Celtis laevigata), Persimmon (Diospyros virginia), and Maple (Acer Sp.). Birch, Willow and Ash are found immediately adjacent to the water of the lake. Although these become readily established and have a rapid initial growth, they are unable to withstand the wave wash. Sycamore (Platanus occidentalis) and Buttonbush (Cephalanthus

occidentalis) are frequently associated with these trees. A more detailed analysis and inventory can be found in the Forest Management Plan for Nimrod Lake, Appendix B.

3-09. Fish and wildlife management. Management of fish and wildlife in the area is the responsibility of the Arkansas Game and Fish Commission. Close liaison is maintained with the Commission, and all possible assistance, encouragement and cooperation is extended to the Commission.

a. Fishing. In the years immediately following the creation of Nimrod Lake, fishing was excellent; but by 1954, it had deteriorated to the point where local people were asking for some remedial measures. The lake was extremely turbid, and the fish population was dominated by nonfavorable sizes of shad, carp, buffalo, drum and gar.

The management plan formulated by the Arkansas Game and Fish Commission to counteract these conditions, included a fall-winter drawdown (1955-56), seeding of rye grass on the exposed mud flats and commercial fishing to correct the fish population. The effect of the overall management plan was immediate clearing of the water and a significant improvement in fishing conditions.

By 1959-60, the fishing had suffered another decline although it was more a matter of a shortage of fishermen than of fish. A management plan was instituted in 1960 in cooperation with the Arkansas Game and Fish Commission consisting of a fall-winter drawdown, commercial fishing and a fish kill using chemicals. This plan was completely carried out when corrective restocking of hatchery-reared fish were added to the lake in the spring of 1961. Future management plans are to open the lake periodically to commercial fishing as recommended by the district biologist. When needed, chemical renovation of the fish population will also occur.

As mentioned before, the situation at Nimrod Lake is not a scarcity of fish as much as a scarcity of fishermen. Because this is strictly a flood control lake, developments of a commercial nature have not

occurred at Nimrod Lake as they have on lakes such as Bull Shoals and Greers Ferry. Local inhabitants have not been aggressive in publicizing and developing the lake, and as a result, other large impoundments in Arkansas have attracted greater numbers of sports fishermen.

b. Wildlife. The Arkansas Game and Fish Commission has been particularly concerned with the development of wildlife areas. A 2,400-acre tract is operated as a public hunting area particularly for migratory fowl. Development includes construction of a 1,000-acre semi-impoundment which is flooded each year during the migratory waterfowl season either by natural runoff or by pumping; annual planting and cultivation of numerous small fields in the area to provide food for wildlife; and construction of adequate access roads and parking areas.

An area of about 1,200 acres of land and water known as the Norman Point Goose Area has been intensively developed and is managed as a refuge for waterfowl with particular emphasis on wild geese. Development includes fencing and posting the area, construction of several small ponds, removal of brush, and cultivation of fields for food for ducks and geese. Management includes a half day hunting restriction during the migratory waterfowl hunting season.

Fifty-seven acres of small (1 to 2 acre) food plots have been developed by the Commission for the benefit of ducks and bobwhite quail. These areas are fenced to avoid conflict with the agricultural and grazing uses of lands adjacent to the lake. They are cultivated to provide food and cover for wildlife and to facilitate game harvest.

An area of about 6,000 acres of land is maintained by the Commission as a wildlife refuge where no hunting is permitted. The remainder of the lake area, excluding developed parks, is available for free public hunting as all leases for agriculture or grazing lands provide that such lands may not be posted to prohibit hunting.

The Arkansas Game and Fish Commission and the U. S. Fish and Wildlife Service have from time to time conducted various studies of the lake area. These studies are continuing in nature, and any recommendations which may result from them will be given favorable consideration if consistent with the operation of the project for flood control.

3-10. Recreation. Located in Yell and Perry Counties, Nimrod Lake is one of the original eight lakes in the comprehensive plan

for flood control in the Arkansas River Basin. Attendance records have shown increasing visitation in the past years, and indicate an overwhelming majority of the visitors are sightseers. Picnicking, fishing and boating are secondary activities. To date, six parks have been constructed, one park will be constructed during FY 1975, and four parks are planned for later development. The parks provide an opportunity for many types of active and passive recreation. For the water oriented visitor, there is fishing, swimming, water skiing, skin diving and boating. Campers and picnickers will find grills, fire wood, tables, drinking water, shelters and sanitary facilities available for their convenience. The hunter is attracted by the deer, squirrel, rabbit, quail, and waterfowl availability in the area outside the parks. For nature lovers, Nimrod Lake is a perfect setting. Pine and hardwood trees cover the lakeshores while the mountains stretch along both the north and south sides of the lake. Wherever a visitor chooses to look, there are beautiful vistas to be enjoyed.

3-11. Historical resources.

a. Perry County. The first white settler in Perry County was Robert Tankin who located about 5 miles southeast of Perryville in the early 1800's. In December, 1840, Perry County was formed from territory taken from the southern part of Conway County. The county was named in honor of Commodore Oliver H. Perry, hero of the battle of Lake Erie, in the War of 1812. The act creating the county provided that the temporary Seat of Justice should be the house of John L. Huston. Early in 1841, Huston and John Greathouse agreed to donate lands in Perryville (founded the year before) on the condition that it be the permanent county seat. The offer was accepted and a log house was built. Courthouses built in 1848, 1872 and 1881 were destroyed by fires. In 1888, a brick courthouse was constructed and is still standing.

During the Civil War a large percentage of the male population joined the Confederate Army. No regular engagement between contending forces took place within the County, but it was overrun to some extent by scouting parties, guerrillas and marauders, and a considerable amount of property was destroyed or stolen. A few persons were killed during these raids.

The Arkansas Historical Preservation Commission lists the Antioch Baptist Church, located on Route 216 near Harris Brake Lake, among its historic structures. It is a one-story structure built of debarked and varnished square cut cypress logs held in place by square notches. The Church was built in 1860. The Methodist church at Houston, Arkansas, the New Dixie Community Church and

the Perry County Courthouse are other historic structures. The Thornburg Civilian Conservation Corps Camp is located on Route 9 near Thornburg. Originally a "New Deal" work camp, the site is now part of the Ouachita National Forest.

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 relinquished to Yell 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.

At Dardanelle the Federal Government established an agency to reduce the dangerous state of friction, which had developed between the Osage and Cherokee Indians. Colonel David Brearly was in charge. In 1823 Col. 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 river. Two of these trees exist today and are known as the 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 north of Nimrod Lake.

Civil War activity in Yell County was composed mostly of a few minor skirmishes. In December, 1863, and again in 1865, minor, inconclusive action took place in or near Dardanelle.

3-12. Archeological resources. No archeological research has been undertaken in the area surrounding Nimrod Lake; and no professional, systematic archeological work was done before construction of the dam. The Arkansas Archeological Survey is certain that archeological sites are located in the area. Several possibilities have been reported to the Survey by amateurs, but these have not been investigated. The Fourche La Fave River Valley was an important area of contact between the prehistoric peoples of the Arkansas River Valley, the Ouachita River basin and the Red River Valley.

SECTION IV

FACTORS INFLUENCING RECREATIONAL DEVELOPMENT

4-01. Region served. Surveys conducted at Nimrod Lake during the Summer and Winter seasons of 1969 indicate that 70% of the project visitation originates from within a zone of influence 75-highway miles from the project as shown on Plate 2. The fourteen Arkansas Counties comprising the zone of influence are Conway, Faulkner, Franklin, Garland, Johnson, Logan, Montgomery, Perry, Pope, Pulaski, Saline, Scott, Sebastian and Yell. Natural resources of the zone of influence include agricultural land, coal, natural gas, bauxite, and timber. According to the Industrial Research and Extension Center, major industries in the region are agribusiness, oil production, lumber manufacturing, mining, canning, and the manufacturing of clothing, furniture, and building materials. Between 1960 and 1970 the total civilian employed work force increased 37% and the manufacturing work force increased 43%.

4-02. Competing recreational areas and visitation. There are 5 completed Corps of Engineers projects within a 75-highway mile radius of Nimrod Lake. An additional 10 Federal and State recreational areas exist in this region which offer similar recreational opportunities. Lakes Hamilton, Catherine (owned by Arkansas Power & Light Company), and Lakes Maumelle and Winona (owned by the city of Little Rock) also afford recreational facilities. In spite of competition from these other areas, annual visitation to Nimrod Lake has increased since 1946. Annual visitation to Nimrod Lake is shown in Table 4-1.

TABLE 4-1

VISITATION TO NIMROD LAKE

<u>Year</u>	<u>Visitation</u>	<u>Year</u>	<u>Visitation</u>
1946	30,052	1960	320,000
1947	49,800	1961	345,900
1948	50,682	1962	312,060
1949	94,839	1963	324,800
1950	116,739	1964	334,800
1951	163,512	1965	325,500
1952	227,556	1966	357,400
1953	223,308	1967	410,500
1954	230,847	1968	434,800
1955	230,000	1969	500,600
1956	235,000	1970	466,600
1957	229,000	1971	472,200
1958	248,600	1972	444,100
1959	273,300	1973	514,100

4-03. Determination of present recreational use.

a. Source of use data. Use data for this report were taken from recreational use surveys conducted by the Little Rock District at Nimrod Lake during 1969. These data were collected, reported, analyzed and interpreted in a uniform manner.

The seasonal factors derived from these surveys were applied to the monthly traffic counter readings to estimate recreation use. The surveys sampled visitor origin and indicated the relationship of weekend to weekday visitation.

b. Planning base. The summer weekend day demand is the basis for estimating the land and water areas, and types of facilities required to adequately serve the recreational users of the project. Normal summer weekend day-use of the project, expressed in activity occasions, 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 a normal summer weekly visitation. The normal summer weekly visitation was then multiplied by the percentage of visitors using the project on the weekend to arrive at the normal summer weekend demand. It was assumed that the visitation was equally distributed between Saturday and Sunday. Therefore, one-half of the normal summer weekend visitation would equal the visitation for a normal summer weekend day.

(2) The number of activity occasions which these visitors generated was calculated by multiplying the normal 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 rate. The average summer weekend day, summer and annual, participation rates for the surveyed outdoor recreation activities at Nimrod Lake during 1969 are shown in Table 4-2.

d. Activity occasions during the base year 1973. The participation rates shown in Table 4-2, page 4-3, were applied to calculated visitation at Nimrod Lake during an average summer weekend day, summer and the total annual visitation during 1973. A summary of the number of activity occasions occurring for each activity is shown in Table 4-3, page 4-4.

TABLE 4-2

1969 PARTICIPATION RATES - EXPRESSED
IN ACTIVITY OCCASIONS PER VISIT - NIMROD LAKE

Activity	Normal summer weekend day(1)	Summer(1)	Annual(2)
Boating	.02	.02	0.13
Fishing	.26	.31	0.18
Water skiing	.06	.04	0.01
Swimming	.38	.38	0.06
Subtotal	.72	.75	0.38
Camping	.14	.20	0.11
Picnicking	.17	.14	0.18
Subtotal	.31	.34	0.29
Sightseeing	.33	.27	0.37
Total	1.36	1.36	1.04

(1) Source: Form 3912a - Summer Summary Survey - 1969

(2) The annual rates were calculated by using data shown in the 1974 annual summary of recreational visiting data. The annual participation for each activity was divided by the annual project visitation.

TABLE 4-3

ACTIVITY OCCASIONS GENERATED AT NIMROD LAKE - 1973

Activity	Normal summer weekend day	Summer	Annual
Boating	108	4,754	5,141
Fishing	1,402	73,687	174,794
Water Skiing	324	9,508	5,141
Swimming	<u>2,050</u>	<u>90,326</u>	<u>66,833</u>
Subtotal	3,884	178,275	251,909
Camping	755	47,540	87,397
Picnicking	<u>917</u>	<u>33,278</u>	<u>87,397</u>
Subtotal	1,672	80,818	174,794
Sightseeing	<u>1,780</u>	<u>64,179</u>	<u>226,204</u>
Total	7,336	323,272	652,907

1973 Visitation	514,100
Summer Visitation 46%*	237,700
Average Summer Week - 1/13	18,285
Average Summer Weekend - 59%	10,788
Average Summer Weekend Day - 50%	5,394

*From 1969 Survey

4-04. Basis for estimating future recreational use. In order to expand the number of activity occasions generated during the base year of 1973 to the year 2020, the following assumptions were made:

a. Seventy percent of the project visitors will continue to be generated within 75 highway miles of the project.

b. The participation rates for outdoor recreational activities will be the same as those determined by the Recreational Use Surveys conducted during 1969. These participation rates will apply to the entire family unit and will consider all family members as occupying space and utilizing facilities.

c. Outdoor recreation has an economic value to the participant in that each dollar spent on outdoor recreational activity is a dollar that cannot be spent for other commodities or services. Therefore, the per capita demand for outdoor recreation is closely related to per capita personal income.

4-05. Development of population and per capita personal income projections. Population and per capita personal income within the 75-mile zone of influence has increased constantly since 1930. Population, per capita personal income and total income projections are shown in Table 4-4. These estimates are based on graphic projection of past population and economic trends in the region.

TABLE 4-4

POPULATION AND INCOME PROJECTIONS FOR
THE ZONE OF INFLUENCE - NIMROD LAKE

Year	Population	Per capita personal income*	Total Income (\$1,000)
1950	484,050	\$1,705	\$ 825,107
1960	514,353	2,213	1,138,079
1970	609,238	3,272	1,993,616
1973	670,000	3,850	2,579,500
1980	690,000	4,560	3,146,400
1990	780,000	5,960	4,648,800
2000	874,000	8,000	6,992,000
2010	980,000	10,050	9,849,000
2020	1,100,000	14,000	15,400,000

(1)*1970 Dollars

4-06. Projected recreational use. The average summer weekend day activity occasions experienced during the base year 1973 were projected to future years on the premise that increasing total income within the region would produce proportionate increases in recreational activity. The projected rate of increase for total income was applied to visitation during the base year to project future recreational use. Total income was used for those projections to account for increase in both population and income. Projected recreational use of Nimrod Lake to the year 2020 is shown in Table 4-5.

TABLE 4-5

PROJECTED NORMAL SUMMER WEEKEND DAY USE OF
NIMROD LAKE EXPRESSED IN ACTIVITY OCCASIONS

	: 1973	: 1980	: 1990	: 2000	: 2010	: 2020
Total activity:	:	:	:	:	:	:
occasions	7,336	10,466	15,635	23,185	32,657	51,139
Boating, ski-	:	:	:	:	:	:
ing & fishing	1,834	2,617	3,859	5,796	8,164	12,785
Swimming	2,050	2,924	4,313	6,478	9,125	14,289
Subtotal	3,884	5,541	8,172	12,274	17,289	27,074
Camping	755	1,077	1,589	2,387	3,362	5,264
Picnicking	917	1,308	1,929	2,898	4,082	6,392
Subtotal	1,672	2,385	3,718	5,285	7,444	11,656
Sightseeing	1,780	2,540	3,745	5,626	7,924	12,409
Annual project:	:	:	:	:	:	:
visitation	514,100	737,200	1,087,200	1,633,100	2,300,300	3,602,200
Average summer:	:	:	:	:	:	:
weekend day	:	:	:	:	:	:
visitation	5,349	7,696	11,349	17,047	24,012	37,602

4-07. Comparison of projections. Table 4-6 shows the outdoor recreational needs for the Nimrod Lake zone of influence, derived from the 1974 Arkansas Statewide Outdoor Recreation Plan (SCORP). Recreational needs are defined as the difference in supply and demand. The data is an accumulation of minimum county needs plus minimum additional regional needs. The minimum county needs were taken from the individual county listings for each of the 14 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, 5, and 6 as defined in the SCORP. These three regions include all of the counties in the zone of influence.

TABLE 4-6

RECREATION NEEDS SHOWN IN THE ARKANSAS STATEWIDE
COMPREHENSIVE OUTDOOR RECREATION PLAN - 1974
NIMROD LAKE ZONE OF INFLUENCE

Activity	: Units	:	1975:	1980:	1985 :	1990
	:	:	:	:	:	:
Boating	: Acre	:	2,721:	2,720:	2,994 :	3,314
Fishing	: Acre	:	27,334:	31,130:	39,419 :	50,852
Swimming	: Sq. ft.	:	485,536:	559,142:	669,812 :	803,131
Camping-tent	: Sites	:	1,406:	1,600:	1,841 :	2,136
Camping-trailer	: Sites.	:	196:	226:	265 :	309
Camping-group	: Beds	:	7,858:	8,525:	9,559 :	10,716
Picnicking	: Sites	:	2,730:	3,227:	3,862 :	4,586
Sightseeing	: Act.occ.	:	7,046,385:	7,584,023:	8,589,440 :	9,713,998
Trails-hiking	: Miles	:	345:	359:	410 :	483
Trails-horseback	: Miles	:	105:	109:	121 :	141
ORV driving	: Miles	:	157:	170:	200 :	231
Waterfowl hunting	: Acre	:	18,065:	20,457:	24,145 :	27,718
Hunting	: Acre	:	165,669:	178,386:	200,832 :	227,304
	:	:	:	:	:	:

4-08. Facility supply capacity. Each recreational facility is capable of supporting a certain amount of recreational use. Requirements are based on criteria in EM 1110-2-400, dated 1 September 1971, and ER 1110-2-400, dated 1 February 1971. The supply capacity of various recreation facilities for an average summer weekend day are as follows:

a. Picnic units. One picnic unit will support 10 activity occasions per day. In addition, one group shelter should be provided for each 225 picnicking activity occasions.

b. Camp units. One camp unit will support 5 camping activity occasions per day.

c. Swimming beach. Twenty-five linear feet of shoreline will support 150 swimming activity occasions.

d. Change shelters. One change shelter should be provided for each swimming beach area with an expected peak attendance of less than 600 swimmers daily.

e. Sanitary facilities. Provide one vault restroom for each swimming beach area with an expected daily use of less than 600 swimmers. Provide one waterborne or vault restroom for each 250 campers. Provide one waterborne or vault restroom for each 2,500 normal summer weekend day visitors.

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 this 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. Supporting facilities. Facilities such as water supply, table shelters, grading and landscape planting will be provided as required.

4-09. Water area capacity.

a. The capability of Nimrod Lake to support fishing is dependent on the fishery resource available in the lake. Based on data furnished by the Arkansas Game & Fish Commission, Nimrod Lake produced an average of 85 pounds of game fish per acre annually during the base year 1973. Assuming an average one pound catch per fishing activity occasion and a daily turnover of two, the lake is capable of supporting 306,000 activity occasions of fishing per year. Projection of the fishing use indicates that Nimrod Lake will reach its optimum fishing capacity during 1985.

b. The ability of Nimrod Lake to support pleasure boating and water skiing is dependent upon the surface area available. There are 556 surface acres zoned for boating or water skiing at Nimrod Lake which supported an estimated 22,542 activity occasions during the 1973 base year.

4-10. Land area capacity. Land area is available at Nimrod Lake for expansion of land based recreational facilities such as camping, picnicking, sightseeing and nature hiking. Development of facilities is limited by steep slopes, frequency of flooding, and proximity of suitable land areas to the water. Site characteristics indicate that the land resource's capacity for development of recreational facilities will not be achieved before the year 2000.

4-11. Facilities required.

a. Requirements for base year 1973. The estimated number of facilities required to serve the public was determined by dividing the projected use by the facility supply capacity. The calculated number of facilities required in the base year 1973 and the number of facilities actually available during 1973 are compared in Table 4-7.

TABLE 4-7

COMPARISON OF EXISTING FACILITIES WITH
CALCULATED FACILITY REQUIREMENTS - 1973

Facility	: Existing :Facilities-1973:	:Calculated 1973 : Requirements	: Calculated : Deficiency
Launching lanes	: 18	: 7	: ---
Swimming beach (linear feet)	: 630	: 342	: ---
Change shelters	: 3	: 3	: ---
Camp units	: 95	: 151	: 56
Picnic units	: 7	: 92	: 85
Group picnic shelters	: 4	: 4	: ---
Toilets	: 12	: 8	: ---

b. Comparison of calculated and actual 1973 needs. Based on the experience and observations of the Resident Engineer, the calculated facility requirements are reasonable and would have been used on an average summer weekend day had they been available.

c. Future facility requirements. Facility supply capacities discussed in paragraph 4-09 were applied to projected recreational use to estimate future facility requirements. These requirements through the year 2000 are shown in Table 4-8.

TABLE 4-8

ESTIMATED FACILITY REQUIREMENTS FOR
FUTURE RECREATIONAL USE OF NIMROD LAKE

Facility	Requirements				Development shown in plan
	1973	1980	1990	2000	
Launching lanes	7	10	15	23	19
Swimming beach (1.f.)	342	487	719	1,080	730
Change shelters	3	4	7	10	4
Camp units	151	216	318	477	390
Picnic units	92	131	193	290	260
Group picnic shelters	4	6	9	13	14
Toilets	8	12	19	27	27

These facility requirements are based on projected visitation increases using current trends in recreational activities and equipment. However, the plan for development is considered flexible enough to allow facility development in accordance with possible changing trends in outdoor recreation.

4-12. Interpretive development.

a. Concepts. Recent recreation trends have shown evidence of man's desire to become more familiar with his natural environment. The most effective way that the Corps of Engineers can help supply our society with activities which help fulfill such a desire is through the interpretation of the physical and historical characteristics found upon Corps project lands.

Nimrod Lake, though man-made, creates a seemingly natural setting since much of its shoreline is wooded and undeveloped. Even in the area near the dam, one must walk only a few hundred feet to be surrounded by a forest of hardwood growth, a few large pine trees, and many types of wild flowers and shrubs. Areas that still abound with such natural beauty must be preserved for people to enjoy.

The history of the project area should also be related to visitors. The Fourche la Fave River which forms Nimrod Lake was traveled by French fur traders, and possibly Spanish explorers. Indian artifacts have been found in the basin both before and after the dam was constructed. There are written accounts of German settlements in the area during the early to mid-1800's.

The basis, then, upon which the Nimrod Lake interpretive program should be based is to convey to visitors a fuller understanding of their natural surroundings and the heritage of the Nimrod Lake area.

b. Goals. Visitors need to be able to leisurely survey their surroundings. This should be an activity which each person can experience at his own pace. One way to provide such activity is by way of an unguided interpretive trail. Included on the trail should be identified trees, timber stands, edible plants and fruits, and narratives about man's relationship to plants and animals.

A historical narrative on the Indian tribes that lived in the Nimrod Lake area should also be provided at wayside exhibits. There are pictures of a piece of clay pottery found during construction of the dam which should be displayed. An old Indian fireplace now located at the Resident Office should be displayed for public viewing as well as artifacts found since the lake has been built.

Evidence was found and documented that French fur traders traveled the Fourche La Fave River. This should be presented in narrative form at an area overlooking the river below the dam where it still flows through its natural banks. This will give visitors a feeling of authenticity as they see the river as it was when it was traveled by their ancestors.

c. Factors affecting interpretive development. Nimrod Lake attracts most visitors from within a fairly small radius. However, included within the radius is the heavily populated Little Rock/North Little Rock area. Therefore, natural areas should be set aside for the enjoyment of those who don't often experience a rugged outdoors setting.

The lake does not draw a great number of visitors each year, (513,100 in 1973) and the Resident Office has a fairly small maintenance staff. It would seem best, therefore, to provide an interpretive program which requires little direct personal contact with project personnel. Campfire talks by rangers or temporary summer employees can be presented on a limited basis using the facilities of the group picnic shelters. Furthermore, the necessary facilities should require as little maintenance as possible.

4-13. Handicapped use. In accordance with ER 1110-1-102 dated 10 March 1972, buildings and facilities shall be designed so as to be safe and usable by handicapped persons to the fullest extent possible. USA Standard A 117.1-1961 dated October 31, 1961, shall serve as a guide to the development of facilities for use by handicapped persons.

SECTION V

GENERAL DEVELOPMENT PROGRAM

5-01. General description of plan. The plan presented herein reflects the general use for intensive recreational development of the land and water areas within the Nimrod Project area. The plan is not intended to be fixed and unchangeable but should be subject to modifications to suit changing conditions and demands. The plan of development consists of providing adequate public-access areas and the construction and/or improvement of existing access roads to the lakeshore through the areas, construction of recreational facilities to the extent necessary for public health and safety of the visiting public and proper maintenance and management of the lake area. Site plans shown are for existing park areas only. Future park areas shall be planned to conform to the cost-sharing provisions of PL-89-72 when the need for additional facilities exists and a non-Federal sponsor provides the necessary assurances to operate and maintain the developments.

5-02. 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 sites by way of existing or proposed roads and highways, scenic quality of the areas, availability of sheltered coves, proximity to other sites, terrain and water depth, and other pertinent data. The general locations of all parks are shown on Plates 3 through 6. All existing parks are shown on Plates 7 through 13.

5-03. Group use. Several levels of group use are provided for at Nimrod Lake. Approximately one-third of the camp and picnic spaces are designed for multi-family use, groups of facilities can be reserved for exclusive group use, and land can be made available for development for other special group use should the need arise.

SECTION VI

LAND USE

6-01. General. The updating of the Master Land Use Plan for Nimrod utilizes the Land Use Classifications set forth in the Corps of Engineers guidelines, ER 1120-2-400, Change 1, dated 1 October, 1972. The plan presents existing and proposed recreational development of land and water areas at Nimrod. It also includes the provision for additional facilities at existing parks to meet increased public demand. Attention was given to the health and safety of the public as well as proper maintenance and management of the project area.

6-02. Allocation of lands. A total of 24,840 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 3-6. These categories are defined and their application discussed as follows:

a. Project operations. There are 3,550 acres below the top of the conservation pool elevation 342 which are subject to almost constant inundation. In addition to this land, 380 acres have been reserved for Administrative purposes creating a total of 3,980 acres allocated exclusively for project operations.

b. Operations: Recreation-intensive use. This allocation includes all lands to be used for development of parks for intensive public facilities. A great portion of the lands surrounding the lake are lower than the flood control pool and are subject to occasional 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 373. Facilities proposed on these lands are those which will receive minimum damage from flooding. The lands above elevation 373 are subject to very infrequent flooding, and are often a considerable distance from the lake edge. Facilities which would be damaged by flooding, such as water wells, restrooms, and picnic shelters, are sited above elevation 373. Lands allocated for recreation-intensive use may be used for agricultural purposes on an interim basis only.

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 located below elevation 373 will have a dual allocation of Project Operations because they are subject to flooding during operation of the lake for its authorized purpose.

d. Operations: Natural area. Natural areas include lands allocated for preservation of scientific, ecological, historical, archeological, 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. A function of natural area zoning is to provide a buffer to protect visual values. No agricultural uses are permitted.

e. Operations: Wildlife management. Wildlife management lands include those lands allocated as habitat for fish and wildlife, or for propagation of such species. These lands are continuously available for low density recreation activities. Presently, 3,595 acres of Corps land are licensed to the Arkansas Game and Fish Commission for the purpose of fish and wildlife management.

SECTION VII

PLAN OF DEVELOPMENT

7-01. General. Nimrod Lake is a flood-control project constructed primarily for the reduction of floods on the Fourche La Pave, Arkansas, and Lower Mississippi River basins. Although the recreation potentiality of the lake provides an added resource, the policies governing the development of this resource will not be permitted to conflict with the primary purpose of flood control.

a. High standards of public health, sanitation and safety are emphasized in the development of the perimeter of the reservoir for public use. This policy will be maintained in the future.

b. The interest of the general public is paramount and that interest is safeguarded by adequate control over the use of the Government-owned land adjacent to the lakeshore. The shoreline is being retained in its natural state insofar as this policy is consistent with making ample facilities available to the public who have free access to all parts of the lake.

c. Public health and safety is safeguarded by providing sanitary drinking water, adequate sanitary facilities and the control of malaria mosquitos.

d. The natural scenic beauty of the lakeshore is being carefully protected, and the interest of the general public is protected by adequate control over the use of Government-owned land in the reservoir area. All leases for commercial development on Government-owned land around the lake are granted in a fair and impartial manner. Prices charged for services and facilities provided by the concessionaire are subject to the approval of the District Engineer so that the interests of the public are safeguarded.

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 reservoir area.

7-02. Existing areas recommended for improvement in this plan. The six existing park areas at Nimrod Lake are recommended for improvement and development as follows:

2. Dam Flow
Pool 264

a. Project Point-River Road. This park is composed of 68 acres located on the north side and 224 acres located on the south side of the dam. The park area is characterized by steep slopes and dense vegetation. Twenty eight acres within the park are located between the flood control pool and conservation pool elevations. Because this area is subjected to periodic inundation, vegetative cover is limited to flood-tolerant types. Access to this park is from State Highway 7 which borders the park on the east side and from State Highway 60 on the north side. This park accounted for 21 percent of the total 1973 project visitation.

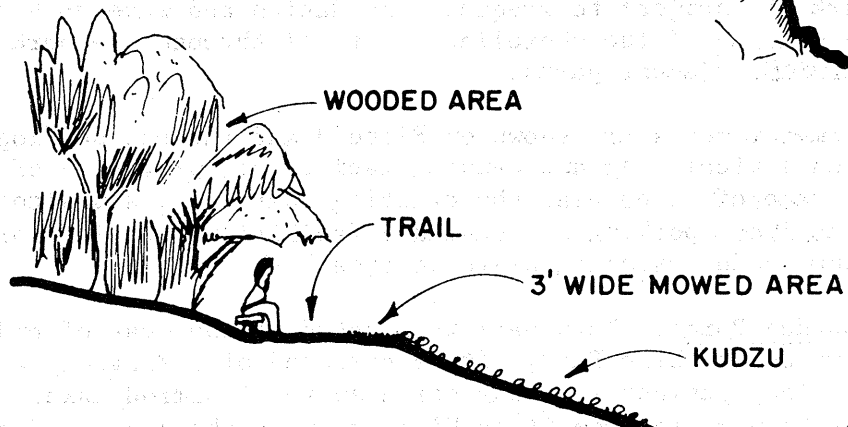
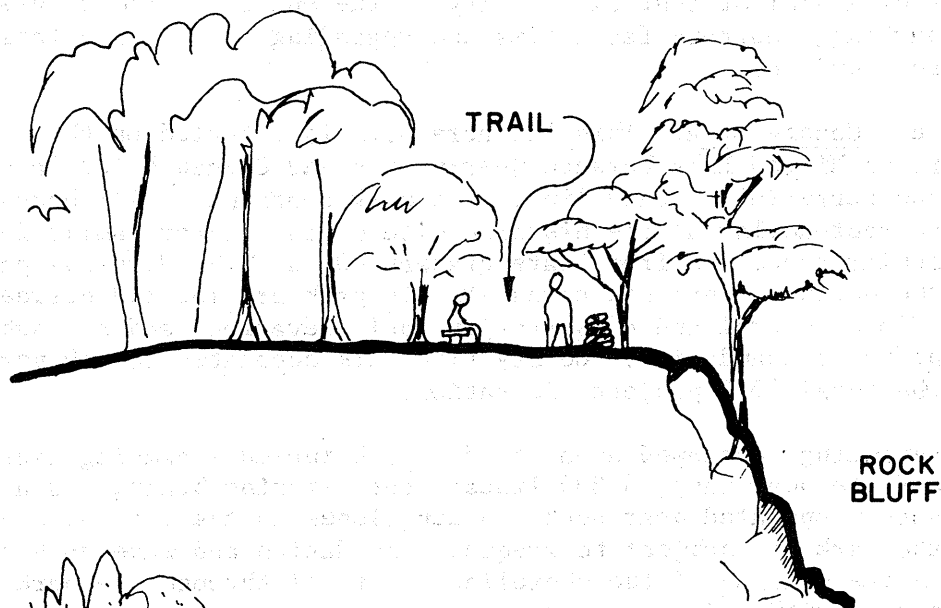
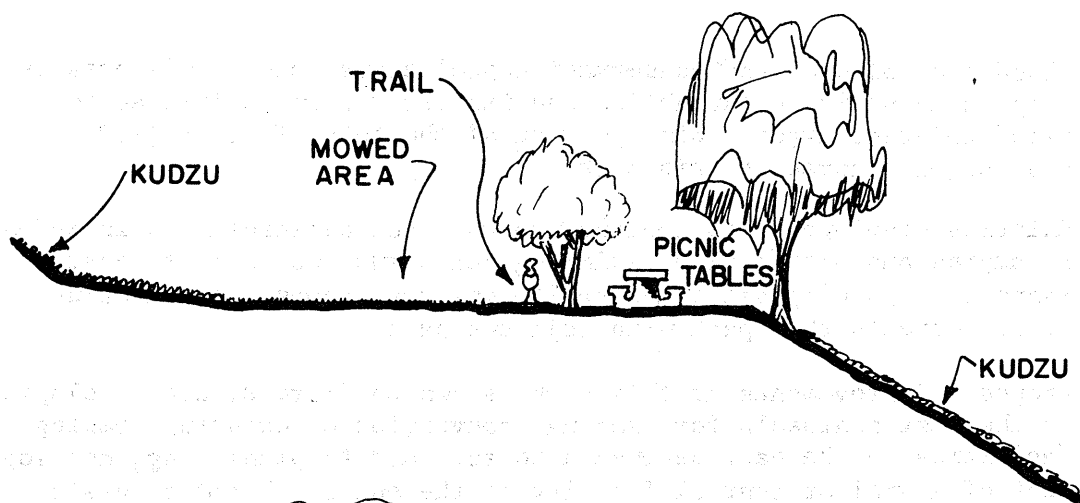
Existing development at this park includes a concrete boat-launching ramp, parking area, two camping areas, a picnic shelter, trail and bank fishing area with wooden steps on the north side of the dam. The area south of the dam is presently used for bank fishing. Two acres of embankment have been planted with Kudzu Vine to reduce erosion of steep slopes on the south side of the dam. This planting has caused considerable damage to trees in the adjacent wooded area and has necessitated much periodic maintenance to prevent the vine from spreading.

Development is proposed for areas on both sides of the dam as shown on Plates 7 and 7A.

Proposed development includes elimination of vehicular access to the park from Highway 60, and provision of a visitor control facility at the entrance from Highway 7; two additional picnic shelters north of the dam, development of the area south of the dam for pedestrian access only, to include an interpretive trail, overlook, fishing walk with steps and picnic facilities. The interpretive trail in the area of the existing embankment planting of Kudzu is designed to limit the growth of this vine into the adjacent wooded area. Typical details of the interpretive trail are shown on page 7-3. Provision of additional parking, sanitary facilities, and improvement of existing facilities where required is included in the proposed development.

2. Dam Flow
Pool 60

b. Quarry Cove. This park takes its name from the adjacent cove formed by inundation of a stone quarry used during construction of the dam. The park is located adjacent to two other parks. It occupies the area between Project Point-River Road Park on the east and County Line Park on the west and between State Highway 60 on the north and the lake on the south. The 148 acre park is composed of a heavily wooded peninsula on each side of the cove. Vehicular access is from Highway 60, with access by trail from the adjacent parks. Eighty eight acres within this park are located between the



ARKANSAS RIVER WATERSHED
FOURCHE LA FAVE RIVER
MASTER RECREATION PLAN
NIMOD LAKE
TRAIL SECTION
U.S. ARMY ENGINEER DISTRICT LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1975

flood control pool and conservation pool elevations. This area is subject to periodic inundation and its vegetation is limited to flood-tolerant types. Nine percent of the total 1973 project visitation occurred at this park.

Existing development is confined to the east peninsula and includes a camping and picnic area, swimming beach and two concrete boat ramps with parking areas and vault-type rest rooms. An existing trail connects this park with adjacent parks.

Proposed improvements at this park, shown on Plate 8, are development of the west peninsula for camping, conversion of existing camping facilities on the east peninsula to accommodate picnicking, development of a visitor control facility at the entrance, and provision of parking, sanitary facilities and upgrading of existing facilities where required.

above flood pool 49
c. County Line. This 145 acre park is situated on the north shore of Nimrod Lake between Quarry Cove and Carden Point Parks at the Perry-Yell county line. The park contains a well house and stone root-cellar at the historic site of the Carter family farm. Vehicular access is from State Highway 60 which borders the park on the north. Ninety six acres at this park are located between the flood control and conservation pool elevations and are subject to periodic inundation. County Line Park accounted for 10 percent of the total 1973 project visitation.

The existing developed area at this park includes camping facilities, a concrete boat ramp, a 300 linear foot swimming beach, and a privately operated boat dock. Steep slopes in the developed portion of the park are subject to frequent inundation and wave wash causing extensive erosion of the shoreline. A trail through the park connects this area with adjacent parks.

Proposed improvements are shown on Plate 9 and include development of additional picnicking and camping facilities, provision of a water ski take-off area near the existing boat ramp, a visitor-control facility, parking and sanitary facilities, and interpretive development of the existing historic area.

above flood pool 12
d. Carden Point. This park is located to the west of and adjacent to County Line Park. It is composed of a sparsely wooded 1,500 foot long peninsula on the north shore of Nimrod Lake. Vehicular access to the park is from State Highway 60 to the north and a trail connects with County Line and Carter Cove parks. This park accounted

for 5 percent of the total 1973 project visitation. Twenty eight of the 40 acres in this park are located between the flood control pool and the conservation pool elevations and are subject to frequent flooding. For this reason, proposed development of this park is limited to improvement of facilities at the small camping area located above the flood control pool elevation as shown on Plate 10.

26000
Flood pool
199
e. Carter Cove. This 360 acre park is located south of State Highway 60 approximately 4 miles southeast of Plainview, Arkansas. The park is adjacent to Carter Cove Waterfowl Rest Area administered by the Arkansas Game and Fish Commission.

Areas of the park located above the flood control pool elevation are heavily wooded while the 216 acres located between this elevation and the conservation pool elevation are sparsely wooded because of their exposure to periodic flooding. Carter Cove Park is connected by 1.9 miles of trail to Garden Point Park to the east and 2.7 miles of trail to Sunlight Bay Park to the west. Fifteen percent of the total 1973 project visitation occurred at this park.

Existing development includes camping and picnicking facilities, 300 linear feet of swimming beach, a concrete boat ramp, a gravel boat ramp and parking and sanitary facilities.

Extensive additional facilities are proposed at this park including development of camping and picnicking areas, a 200 linear foot swimming beach, a visitor control facility, parking, and waterborne sanitary and sewage treatment for facilities. Proposed development is shown on Plate 11.

26000
Flood pool
1997
f. Sunlight Bay. This 1,573 acre park is located on Wilson Slough upstream from the expanse of Nimrod Lake, south of Plainview, Arkansas. Vehicular access is from Sunlight Road which borders the park on the north. The park is connected to Carter Cove Park to the east by 2.7 miles of trail and to the State Highway 27 bridge crossing to the west by 5.7 miles of trail. Eight hundred and seventy six acres within the park are located between the flood control pool and conservation pool elevations. This area is subject to frequent flooding and vegetation is limited to flood-tolerant types. Sunlight Bay Park accounted for 8 percent of the total 1973 project visitation.

Existing facilities consist of a camping and picnic area, concrete boat ramp and parking and sanitary facilities.

Proposed facilities include additional camping and picnic areas, and parking and sanitary facilities as shown on Plate 12.

g. Plainview City Park. This 10-acre park site is being developed jointly by the city of Plainview and the Corps under the cost-sharing provisions of PL 89-72. The area is located adjacent to the city of Plainview near Porter Creek. The site is sparsely wooded and affords good views of the surrounding countryside. The site is approximately two city blocks from the Plainview High School. Development, shown on Plate 13, will include a multipurpose court, picnic shelter, picnic tables, and sanitary facilities, roads, and parking areas as required.

7-03. Interpretive program. The existing 27 miles of trail utilize the roadbeds of several abandoned roads, connecting five of the existing parks at Nimrod Lake. Because this extensive trail system traverses such a large, varied area, it presents an outstanding opportunity for interpretation of the many natural and man-made features occurring in the project area.

An interpretive trail will be developed at the area south of the dam as shown on Plate 7A. It will total approximately 2 miles running east and west along a cliff paralleling the shoreline and back through a wooded area to a rocky point overlooking the Fourche La Pave River in its natural state below Nimrod Dam. A shorter route will be available by way of a cut-off trail. The short route will total about 0.6 miles. Trees and shrubs will be labeled along the trail to give visitors a better understanding of their natural surroundings. Trees and shrubs will be identified that bear edible fruit. On the rocky bluff overlooking the river at the end of the trail there will be an exhibit with a brief narrative describing possible French or Spanish exploration on the Fourche La Pave River. This will afford the visitors an opportunity to relate to the area as it was during the days when the exploration took place.

A small outdoor interpretive display area will be provided on the north end of the dam. It will include narratives about the interpretive trail across the dam, Indians of the area, and early European travel on the Fourche La Pave. These will be very brief narratives, and will refer to those included on the interpretive trail. This will build interest about the trail, yet inform visitors who are unable to walk it. Artifacts found in the area will be displayed as well as photographs of those too large or unavailable for display.

7-04. Areas recommended for future development. Four areas are proposed for future development at Nimrod Lake as follows:

a. Brush Creek. This 128 acre area is located on the south shore of Nimrod Lake. It is composed of 68 acres above the flood

control pool elevation and 60 acres between the conservation and flood control pool elevations. The site is heavily wooded and the topography allows for extensive recreational development.

b. Hogan Creek. This site is located on the upper end of the lake which at conservation pool level is confined to the natural stream bed. It is adjacent to the Ward Crossing Bridge and has received considerable use as a boat launching site. Approximately 129 acres are above conservation pool level, but the site is located completely below the flood control pool and is inundated at high stages. Only basic picnic facilities of masonry construction will be provided when the area is developed.

c. Rover. Located in the upper portion of the lake the proposed 232 acre park contains approximately 140 acres above the flood control pool and 92 acres between the conservation and flood control pool elevations. The site is situated on a pine-covered knoll and is readily adaptable to all types of recreational development. The area is presently used by float fishermen for a base camp and launching site.

d. Highway 27. This area is located near the State Highway 27 crossing of Nimrod Lake. It is composed of 48 acres above the conservation pool, but the site is located completely below the flood control pool and is frequently inundated during periods of high water. Future development of this area for boat-launching with provision for parking and sanitary facilities is proposed.

7-05. 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 rock outcroppings, with a minimum of excavation, and will have a natural rustic appearance. Where possible, trail profiles will not exceed 5%. Trail width will be about 3 feet and surfaced with loose aggregate.

SECTION VIII

COORDINATION WITH OTHER AGENCIES

8-01. Original coordination. Development of Nimrod Lake and related resources has been coordinated with all interested State and local governmental agencies. In order to make best use of the lake, the National Park Service, the U. S. Fish and Wildlife Service and the Arkansas State Health Department were contacted for their input.

A public hearing was held on 8 March 1946, at Plainview, Arkansas, which was attended by about 250 people including representatives of various federal, state and county agencies; local organizations; and interested individuals. The plan was favorably received by those in attendance.

8-02. Subsequent coordination. The Soil Conservation Service, Department of Agriculture, acting through the Fourche La Pave-Petit Jean Conservation District, prepared an overall conservation plan for government-owned land in the reservoir area which was submitted to higher authority as a supplement to the original Master Plan. This was approved by the Corps of Engineers on 13 March 1950. Subsequently, an updated Master Plan was prepared and approved on 10 March 1966. It was not felt that a public hearing was necessary.

8-03. 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 were requested to furnish their comments and recommendations concerning the Master Plan and operation of the project. The 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 3-05, Water Characteristics, of this Master Plan.

b. Arkansas Archeological Survey. Information and suggestions from this agency were incorporated in Section 3-13, Archeological Sites.

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. U. S. Department of Agriculture, Forest Service. Self-explanatory.

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

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, Perryville, Arkansas. No reply.

k. Honorable Jason Smith, Mayor of Plainview, Arkansas. No reply.

l. Arkansas Game and Fish Commission. Self-explanatory



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.

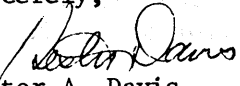
We think that interpretive programs about the prehistoric utilization of an area should be developed whenever possible. The research for this type of program can be done at the same time as recovery research discussed above. There can be little doubt but what the potential for an interpretive program--in 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,

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.

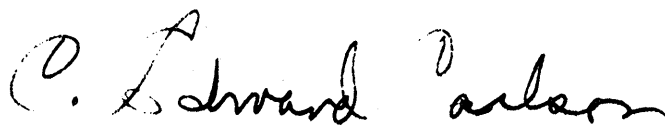
1. Manage all resources and activities consistent with soil and space capabilities and to improve the quality of air, water, and natural beauty;

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.

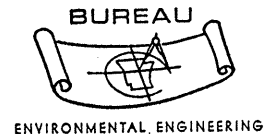
Sincerely yours,

Robert T. Webb

Acting Regional Director



ARKANSAS STATE DEPARTMENT OF HEALTH
LITTLE ROCK



XXXXXX
XXXXXX
XXXXXX

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

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

P. O. Box 1270
Hot Springs, Arkansas 71901

REPLY TO: 2310 Recreation System Planning

April 27, 1973

SUBJECT: Nimrod Lake



TO: Calvin W. Shelton
Engineering Division
Department of the Army
Little Rock District, Corps of Engineers
P. O. Box 867
Little Rock, Arkansas 72203

We have no developmental plans scheduled adjacent to Nimrod Lake within the next ten years that would affect up dating of your Master Plan.

The Ouachita National Forest five year Land and Water Conservation Fund Acquisition Plan includes private tracts adjacent to the south shore of Nimrod.

Presently this program is unfunded on the Ouachita and prospects are for this situation to continue.



RALPH H. KUNZ
Director, Resources



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

Miss Karen Cooke

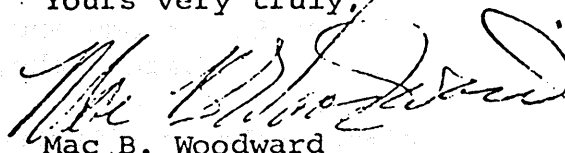
Page 2

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:

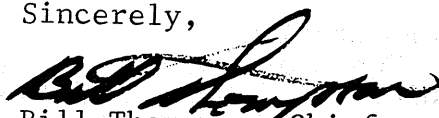
- | | | |
|----------------------|------------------------|----------|
| 1. 50 mile radius | | |
| a. Ozark Folk Center | Non-water oriented | 1973 |
| 2. 100 mile radius | | |
| a. Lake Charles | SCS Lake renovation | 1975 |
| b. Lake Dardanelle | renovation | 1975 |
| 3. 200 mile radius | | |
| a. 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
STUTT GART

JOE D. SCOTT
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RALPH B. GRIFFIN
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GUY FENTER
CHARLESTON

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

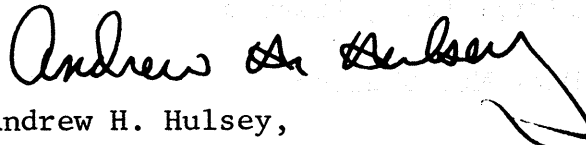
- 2 -

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 IX

JUSTIFICATION FOR DEVELOPMENT

9-01. Benefits and economic value. The benefits derived from the utilization of Nimrod Lake are in the form of pleasure and relaxation enjoyed by the visiting public in the use of the recreational facilities. Based on 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 Nimrod Lake is \$1.07. Application of this unit value to the annual number of recreation days for each activity, results in a gross benefit of \$550,089 in 1973. Data relating to collateral benefits of Nimrod Lake or the surrounding area are presented in Table 9-1.

TABLE 9-1

COLLATERAL BENEFITS OF NIMROD LAKE

	<u>1940</u>	<u>1973</u>
1. Number of vacation resorts, cottages, camps, lodges, motels and similar accommodations located on private property adjoining Government ownership providing overnight accommodations	2	22
2. Number of accommodations available in above establishments	22	328
3. Number of restaurants, cafes, etc., on property adjoining Government ownership	2	4
4. Number of subdivisions adjoining Government ownership:	0	1
a. Total number of lots in subdivisions	0	150
b. Number of lots developed	0	108
5. Number of real estate transfers in counties	1,037	696
6. Assessed valuation of all taxable property in counties in which lake is located	3,392,405	18,977,176

SECTION X

ADMINISTRATION AND MANAGEMENT

10-01. Policies. The general policies with regard to Nimrod 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 lakes administered by the Corps of Engineers as published in Section 311.1 title 36, chapter 3, of the Code of Federal Regulations, which are applicable to Nimrod Lake.

10-02. Administration. The administration of the recreational program at Nimrod Lake is carried out jointly through District Office personnel and field personnel of the Resident Office. The District Office personnel are concerned mainly with determining the nature and extent of developments; preparing construction requirements and codes; initiating, coordinating, and reconciling activities relative to policies and regulations; relations with other agencies; management; leases; licenses; permits; and public relations.

10-03. 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 use; obtain compliance with the terms of leases, concessions, and permits; protect and maintain Government property; and require high standards of public health and safety. The Resident Office is located at Nimrod Lake and serves both the Nimrod Lake and Blue Mountain Lake projects. A Resident Engineer *Manager* and a clerk serve both projects. Those assigned directly to the Nimrod project include the facility maintenance manager, park manager, 3 park technicians, construction/maintenance worker, carpenter, and a clerk.

10-04. Monumentation. A continuing program of project boundary monumentation is in progress at Nimrod Lake. As of 1 January 1975, it is estimated that 78 of the 79 total project perimeter miles have been monumented and that the program is 99 percent complete. The program will continue as funds and workload permit.

SECTION XI

COST ESTIMATE

11-01. Summary of estimated costs. A summary of estimated cost for additional development by park is shown in Table 11-1. A summary of estimated cost for the additional development by facilities planned is shown in Table 11-2. A detailed cost estimate for additional recreational facilities in each area is shown in Table 11-3.

11-02. Cost sharing policy. Administration policy as set forth in EC 1130-2-138, dated 31 May 1974, requires that further development of existing or future recreation, after FY 1974, will be subject to cost-sharing with a non-federal body which agrees to assume operation and maintenance of the recreation area upon completion of development. The Corps, if a non-federal cost-sharing partner cannot be obtained, may develop urgently needed sanitary facilities to comply with State and Federal Laws, and upgrade existing recreation areas to a level where recreation use fees will offset operation and maintenance cost.

11-03. Facility costs. Cost estimates of public use facilities used in the following tables are based on current price levels and experienced cost of similar facilities.

NIMROD LAKE

TABLE 11-2

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

NIMROD LAKE
SUMMARY

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	LF	\$ 12.75	29,100	290	\$ 3,700
(2) Flexible pavement	do		17,870		
(a) New construction	do	19.00		15,526	295,000
(b) Existing gravel	do	3.50		8,286	29,000
(c) Existing gravel removed	do	2.00		6,400	12,800
(d) Existing pavement removed	do	4.80		208	1,000
b. 12 feet wide (1-way)					
(1) Gravel	LF	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		29,308	351,700
(b) Existing gravel	do	2.50		3,280	8,200
(c) Existing gravel removed	do	1.90		1,474	2,800
Parking areas					
a. Gravel	SY	5.00		4,040	20,200
b. Flexible pavement	do				
(1) New construction	do	8.00		27,825	222,600
(2) Existing gravel	do	2.25		2,711	6,100
Launching lanes, concrete	Ea	30,000	7	2	60,000
Camping spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		352	176,000
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000		.07	200
b. Hiking	do	3,000	2.14	.13	400
c. Interpretive	do	10,000		1.7	17,000
d. Motorcycle	do	1,200		.75	900
e. Benches	Ea	300.00		19	5,700
f. Footbridges	do	1,500		1	1,500

TABLE 11-2 (con.)

SUMMARY						
Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities		
			FY 1975 Quantity	Quantity	Cost	
Park gates	Ea	\$500.00:	2	13	\$6,500	
Picnic units	Ea	500.00:		206	103,000	
Camp units						
a. Basic (including walk-in)	Ea	650.00:	95	337	219,100	
b. Add shelter	do	250.00:				
c. Add electrical	do	200.00:	7			
Table canopies	Ea	250.00:	38			
Picnic shelters	Ea	12,100:	4	9	108,900	
Mercury vapor lights	Ea	500.00:		15	7,500	
Changehouses	Ea	8,500:	3	1	8,500	
Swimming beaches	Ea	6,000:	3	1	6,000	
Picnic spurs						
a. Gravel	Ea					
b. Flexible pavement	do					
(1) New construction	do	500.00:		46	23,000	
(2) Existing gravel	do					
Amphitheaters	Ea	750.00:				
Entrance complex	Ea	15,000:		4	60,000	
Trailer sanitary station	Ea	4,400:	3	2	8,800	
Drinking fountains	Ea	1,500:		62	93,000	
Toilets						
a. Masonry						
(1) Vault	Ea	20,000:	10	8	160,000	
(2) Waterborne	do	32,000:	1	3	96,000	
(3) Waterborne with showers	do	34,000:		4	136,000	
(4) Convert to waterborne	do	15,000:		1	15,000	
b. Wooden, vault	do	12,000:				
Water system						
a. Water line, 3/4" PVC	LF	1.75:		12,629	22,100	
b. Water line, 1" PVC	LF	2.50:		6,320	15,800	
c. Water line, 1½" PVC	LF	3.25:		5,877	19,100	
d. Water line, 2" PVC	LF	3.90:				
e. Gate valves, with boxes)	Job					
f. Water wells	Ea	5,000:	7	7	35,000	
g. Wellhouse and equipment)	Ea.	13,100:		8	104,800	
h. Electrical	Job	2,500:		8	20,000	

TABLE 11-2 (con.)

SUMMARY						
Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities		
			FY 1975 Quantity	Quantity	Cost	
Sewer system						
a. Sewer lines, 4" PVC gravity	LF	\$ 7.50		5,600	\$ 42,000	
b. Sewer lines, 6" PVC gravity	do	8.00				
c. Sewer lines, 4" PVC force main	do	5.00		800	4,000	
d. Outfall lines, 4" PVC gravity	do	7.50		2,893	21,700	
e. Outfall lines, 4" C.I. in lake	do	10.00		350	3,500	
f. Manholes	Ea	400.00		17	6,800	
g. Treatment plant tertiary 55,000 GPD	Ea	120,000		1	120,000	
h. Lift station	Ea	16,000		2	32,000	
i. Electrical	Job				7,500	
Fence	LF	4.00		1,150	4,600	
Total					2,725,000	

TABLE 11-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

NIMROD LAKE

RIVER ROAD AND PROJECT POINT PARK

Item	Unit	Unit Cost	Existing	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	LF	\$ 12.75	3,340		
(2) Flexible pavement	do		8,300		
(a) New construction	do	19.00		500	9,500
(b) Existing gravel	do	3.50		1,457	5,100
(c) Existing gravel removed	do	2.00			
(d) Existing pavement removed	do	4.80			
b. 12 feet wide (1-way)					
(1) Gravel	LF	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		742	8,900
(b) Existing gravel	do	2.50		880	2,200
(c) Existing gravel removed	do	1.90			
Parking areas					
a. Gravel	SY	5.00	2,600	700	3,500
b. Flexible pavement	do				
(1) New construction	do	8.00		3,525	28,200
(2) Existing gravel	do	2.25		89	200
Launching lanes, concrete	do	30,000	1		
Camping spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500		19	9,500
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000		.07	200
b. Hiking	do	3,000			
c. Interpretive	do	10,000		1.7	17,000
d. Motorcycle	do	1,200			
e. Benches	Ea	300		17	5,100
f. Footbridges	do	1,500		1	1,500

TABLE 11-3 (con.)

RIVER ROAD AND PROJECT POINT PARK

Item	Unit	Cost	Existing Facilities		Proposed Facilities	
			FY 1975	Quantity	Quantity	Cost
Park gates	Ea	\$ 500				
Picnic units	Ea	500			5	\$ 2,500
Camp units						
a. Basic (including walk-in)	Ea	650	20			
b. Add shelter	do	250				
c. Add electrical	do	200				
Table canopies	Ea	250	11			
Picnic shelters	Ea	12,100	1		2	24,200
Mercury vapor lights	Ea	500			3	1,500
Changehouses	Ea	8,500				
Swimming beaches	Ea	6,000				
Picnic spurs						
a. Gravel	Ea					
b. Flexible pavement	do					
(1) New construction	do	500				
(2) Existing gravel	do					
Amphitheaters	Ea	750				
Entrance complex	Ea	15,000			1	15,000
Trailer sanitary station	Ea	4,400			1	4,400
Drinking fountains	Ea	1,500			1	1,500
Toilets						
a. Masonry						
(1) Vault	Ea	20,000	3		1	20,000
(2) Waterborne	do	32,000	1			
(3) Waterborne with showers	do	34,000				
(4) Convert to waterborne	do	15,000				
b. Wooden, vault	do	12,000				
Water system						
a. Water line, 3/4" PVC	LF	1.75			857	1,500
b. Water line, 1" PVC	LF	2.50			2,080	5,200
c. Water line, 1 1/2" PVC	LF	3.25				
d. Water line, 2" PVC	LF	3.90				
e. Gate valves, with boxes	Job					
f. Water wells	Ea	5,000	2			
g. Wellhouse and equipment	Ea	13,100			1	13,100
h. Electrical	Job	2,500				2,500

TABLE 11-3 (con.)

RIVER ROAD AND PROJECT POINT PARK

Item	Unit	Unit Cost	Existing	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Sewer system					
a. Sewer lines, 4" PVC gravity	LF	\$ 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.I. in lake	do	10.00			
f. Manholes	Ea	400.00			
g. Treatment plant tertiary	GPD				
h. Lift station	Ea	16,000			
i. Electrical	Job				
Fence	LF	4.00		1,150	\$ 4,600
Total					186,900

TABLE 11-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

NIMROD LAKE

QUARRY COVE PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	LF	\$12.75	2,660	290	\$ 3,700
(2) Flexible pavement	do		4,460		
(a) New construction	do	19.00		3,300	62,700
(b) Existing gravel	do	3.50		1,314	4,600
(c) Existing gravel removed	do	2.00			
(d) Existing pavement removed	do	4.80			
b. 12 feet wide (1-way)					
(1) Gravel	LF	8.50	720		
(2) Flexible pavement	do				
(a) New construction	do	12.00		3,658	43,900
(b) Existing gravel	do	2.50		1,320	3,300
(c) Existing gravel removed	do	1.90		684	1,300
Parking areas					
a. Gravel	SY	5.00		3,340	16,700
b. Flexible pavement	do				
(1) New construction	do	8.00		7,225	57,800
(2) Existing gravel	do	2.25		1,378	3,100
Launching lanes, concrete	Ea	30,000	2		
Camping spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		69	34,500
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000			
b. Hiking	do	3,000			
c. Interpretive	do	10,000			
d. Motorcycle	do	1,200	0.45		
e. Benches	Ea	300.00			
f. Footbridges	do	1,500			

TABLE 11-3 (con.)

QUARRY COVE PARK

Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities	
				Quantity	Cost
Park gates	Ea	\$ 500.00		1	\$ 500
Picnic Units	Ea	500.00		25	12,500
Camp units					
a. Basic (including walk-in)	Ea	650.00	30	70	45,500
b. Add shelter	do	250.00			
c. Add electrical	do	200.00			
Table canopies	Ea	250.00	11		
Picnic shelters	Ea	12,100	1		
Mercury vapor lights	Ea	500.00		1	500
Changehouses	Ea	8,500	1		
Swimming beaches	Ea	6,000	1		
Picnic spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		36	18,000
(2) Existing gravel	do				
Amphitheaters	Ea	750.00			
Entrance complex	Ea	15,000		1	15,000
Trailer sanitary station	Ea	4,400	1		
Drinking fountains	Ea	1,500		8	12,000
Toilets					
a. Masonry					
(1) Vault	Ea	20,000	2	3	60,000
(2) Waterborne	do	32,000			
(3) Waterborne with showers	do	34,000			
(4) Convert to waterborne	do	15,000			
b. Wooden, vault	do	12,000			
Water system					
a. Water line, 3/4" PVC	LF	1.75		2,000	3,500
b. Water line, 1" PVC	LF	2.50		1,000	2,500
c. Water line, 1½" PVC	LF	3.25			
d. Water line, 2" PVC	LF	3.90			
e. Gate valves, with boxes	Job				
f. Water wells	Ea	5,000	1	1	5,000
g. Wellhouse and equipment	Ea	13,100		1	13,100
h. Electrical	Job	2,500			2,500

TABLE 11-3 (con.)

QUARRY COVE PARK

Item	Unit	Unit Cost	Existing	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Sewer system					
a. Sewer lines, 4" PVC gravity	LF	\$ 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" CI in lake	do	10.00			
f. Manholes	Ea	400.00			
g. Treatment plant tertiary GPD	Ea				
h. Lift station	Ea	16,000			
i. Electrical	Job				
Fence	LF	4.00			
Total					\$ 422,200

TABLE 11-3

NIMROD LAKE

COUNTY LINE PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	LF	\$12.75	2,480		
(2) Flexible pavement	do		3,000		
(a) New construction	do	19.00		2,942	\$ 55,900
(b) Existing gravel	do	3.50		257	900
(c) Existing gravel removed	do	2.00		2,100	4,200
(d) Existing pavement removed	do	4.80			
b. 12 feet wide (1-way)					
(1) Gravel	LF	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		3,683	44,200
(b) Existing gravel	do	2.50			
(c) Existing gravel removed	do	1.90			
Parking areas					
a. Gravel	SY	5.00			
b. Flexible pavement	do				
(1) New construction	do	8.00		3,150	25,200
(2) Existing gravel	do	2.25		1,111	2,500
Launching lanes, concrete	Ea	30,000	1		
Camping spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500.00		32	16,000
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000			
b. Hiking	do	3,000	0.50		
c. Interpretive	do	10,000			
d. Motorcycle	do	1,200		0.75	900
e. Benches	Ea	300.00		2	600
f. Footbridges	do	1,500			

TABLE 11-3 (con.)

COUNTY LINE PARK

Item	Unit	Unit Cost	Existing Facilities		Proposed Facilities	
			FY 1975	Quantity	Quantity	Cost
Park gates	Ea	\$500.00			3	\$1,500
Picnic units	Ea	500.00			10	5,000
Camp units						
a. Basic (including walk-in)	Ea	650.00	12		36	23,400
b. Add shelter	do	250.00	6			
c. Add electrical	do	200.00	4			
Table canopies	Ea	250.00				
Picnic shelters	Ea	12,100			1	12,100
Mercury vapor lights	Ea	500.00			3	1,500
Changehouses	Ea	8,500	1			
Swimming beaches	Ea	6,000	1			
Picnic spurs						
a. Gravel	Ea					
b. Flexible pavement	do					
(1) New construction	do	500.00			10	5,000
(2) Existing gravel	do					
Amphitheaters	Ea	750.00				
Entrance complex	Ea	15,000			1	15,000
Trailer sanitary station	Ea	4,400	1			
Drinking fountains	Ea	1,500			6	9,000
Toilets						
a. Masonry						
(1) Vault	Ea	20,000	1		3	60,000
(2) Waterborne	do	32,000				
(3) Waterborne with showers	do	34,000				
(4) Convert to waterborne	do	15,000				
b. Wooden vault	do	12,000				
Water system						
a. Water line, 3/4" PVC	LF	1.75			1,829	3,200
b. Water line, 1" PVC	LF	2.50	1000		1,280	3,200
c. Water line, 1 1/2" PVC	LF	3.25				
d. Water line, 2" PVC	LF	3.90				
e. Gate valves, with boxes	Job					
f. Water wells	Ea	5,000	1		1	5,000
g. Wellhouse and equipment	Ea	13,100			1	13,100
h. Electrical	Job	2,500				2,500

TABLE 11-3 (con.)

COUNTY LINE PARK					
Item	Unit	Cost	Existing	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Sewer system					
a. Sewer lines, 4" PVC gravity	LF	\$ 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.I. in lake	do	10.00			
f. Manholes	Ea	400.00			
g. Treatment plant tertiary	GPD				
h. Lift station	Ea	16,000			
i. Electrical	Job				
Fence	LF	4.00			
Total					\$ 309,900

TABLE 11-3 (con.)

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

NIMROD LAKE

CARDEN POINT PARK

Item	Unit	Unit Cost	Existing Facilities		Proposed Facilities	
			Quantity	FY 1975	Quantity	Cost
Roads						
a. 18 feet wide (2-way)						
(1) Gravel	LF	\$ 12.75:	2,800			
(2) Flexible pavement	do					
(a) New construction	do	19.00:				
(b) Existing gravel	do	3.50:			486	\$ 1,700
(c) Existing gravel removed	do	2.00:				
(d) Existing pavement removed	do	4.80:				
b. 12 feet wide (1-way)						
(1) Gravel	LF	8.50:				
(2) Flexible pavement	do					
(a) New construction	do	12.00:				
(b) Existing gravel	do	2.50:			320	800
(c) Existing gravel removed	do	1.90:				
Parking areas						
a. Gravel	SY	5.00:				
b. Flexible pavement	do					
(1) New construction	do	8.00:				
(2) Existing gravel	do	2.25:				
Launching lanes, gravel	Ea	30,000:	1			
Camping spurs	Ea					
a. Gravel	Ea					
b. Flexible pavement	do					
(1) New construction	do	500:				
(2) Existing gravel	do					
Trails						
a. Connecting	Mile	3,000:				
b. Hiking	do	3,000:	1.0			
c. Interpretive	do	10,000:				
d. Motorcycle	do	1,200:				
e. Benches	Ea	300:				
f. Footbridges	do	1,500:				

TABLE 11-3 (con.)

CARDEN POINT PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Park gates	Ea	\$ 500		1	\$ 500
Picnic units	Ea	500			
Camp units					
a. Basic (including walk-in)	Ea	650	9		
b. Add shelter	do	250			
c. Add electrical	do	200			
Table canopies	Ea	250	3		
Picnic shelters	Ea	12,100			
Mercury vapor lights	Ea	500			
Changehouses	Ea	8,500			
Swimming beaches	Ea	6,000			
Picnic spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500			
(2) Existing gravel	do				
Amphitheaters	Ea	750			
Entrance complex	Ea	15,000			
Trailer sanitary station	Ea	4,400			
Drinking fountains	Ea	1,500			
Toilets					
a. Masonry					
(1) Vault	Ea	20,000	1		
(2) Waterborne	do	32,000			
(3) Waterborne with showers	do	34,000			
(4) Convert to waterborne	do	15,000			
b. Wooden, vault	do	12,000			
Water system					
a. Water line, 3/4" PVC	LF	1.75			
b. Water line, 1" PVC	LF	2.50			
c. Water line, 1½" PVC	LF	3.25			
d. Water line, 2" PVC	LF	3.90			
e. Gate valves, with boxes	Job				
f. Water wells	Ea	5,000	1		
g. Wellhouse and equipment	Ea	13,100			
h. Electrical	Job	2,500			

TABLE 11-3 (con.)

CARDEN POINT PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Sewer system					
a. Sewer lines, 4" PVC gravity	LF	\$ 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.I. in lake	do	10.00			
f. Manholes	Ea	400			
g. Treatment plant tertiary	GPD				
h. Lift station	Ea	16,000			
i. Electrical	Job				
Fence	LF	4.00			
Total					\$3,000

TABLE 11-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

NIMROD LAKE

CARTER COVE PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	LF	\$12.75	8,220		
(2) Flexible pavement	do		1,200		
(a) New construction	do	19.00		8,042	\$152,800
(b) Existing gravel	do	3.50		2,829	9,900
(c) Existing gravel removed	do	2.00		3,750	7,500
(d) Existing pavement removed	do	4.80		208	1,000
b. 12 feet wide (1-way)					
(1) Gravel	LF	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		17,525	210,300
(b) Existing gravel	do	2.50		80	200
(c) Existing gravel removed	do	1.90		790	1,500
Parking areas					
a. Gravel	SY	5.00			
b. Flexible pavement	do				
(1) New construction	do	8.00		10,600	84,800
(2) Existing gravel	do	2.25			
Launching lanes, concrete	Ea	30,000	1	2	60,000
Camping spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500		209	104,500
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000			
b. Hiking	do	3,000			
c. Interpretive	do	10,000			
d. Motorcycle	do	1,200			
e. Benches	Ea	300			
f. Footbridges	do	1,500			

TABLE 11-3 (con.)

CARTER COVE PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Park gates	Ea	\$ 500	1	6	\$ 3,000
Picnic units	Ea	500		116	58,000
Camp units					
a. Basic (including walk-in)	Ea	650	10	209	135,900
b. Add shelter	do	250	5		
c. Add electrical	do	200			
Table canopies	Ea	250			
Picnic shelters	Ea	12,100	1	5	60,500
Mercury vapor lights	Ea	500		7	3,500
Changehouses	Ea	8,500	1	1	8,500
Swimming beaches	Ea	6,000	1	1	6,000
Picnic spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500			
(2) Existing gravel	do				
Amphitheaters	Ea	750			
Entrance complex	Ea	15,000		1	15,000
Trailer sanitary station	Ea	4,400		1	4,400
Drinking fountains	Ea	1,500		38	57,000
Toilets					
a. Masonry					
(1) Vault	Ea	20,000	1		
(2) Waterborne	do	32,000		3	96,000
(3) Waterborne with showers	do	34,000		4	136,000
(4) Convert to waterborne	do	15,000		1	15,000
b. Wooden, vault	do	12,000			
Water system					
a. Water line, 3/4" PVC	LF	1.75		6,800	11,900
b. Water line, 1" PVC	LF	2.50		720	1,800
c. Water line, 1½" PVC	LF	3.25		5,877	19,100
d. Water line, 2" PVC	LF	3.90			
e. Gate valves, with boxes	Job				
f. Water wells	Ea	5,000	1	3	15,000
g. Wellhouse and equipment	Ea	13,100		3	39,300
h. Electrical	Job	2,500			7,500

TABLE 11-3 (con.)

CARTER COVE PARK

Item	Unit	Unit Cost	Existing	Proposed Facilities	
			Facilities FY 1975 Quantity	Quantity	Cost
Sewer system					
a. Sewer lines, 4" PVC gravity	LF	\$7.50		5,600	\$42,000
b. Sewer lines, 6" PVC gravity	do	8.00			
c. Sewer lines, 4" PVC force main	do	5.00		800	4,000
d. Outfall lines, 4" PVC gravity	do	7.50		2,893	21,700
e. Outfall lines, 4" C.I. in lake	do	10.00		350	3,500
f. Manholes	Ea	400		17	6,800
g. Treatment plant tertiary 55,000 GPD	Ea	120,000		1	120,000
h. Lift station	Ea	16,000		2	32,000
i. Electrical	Job	7,500		1	7,500
Fence	LF	4.00			
Total					1,563,400

TABLE 11-3

DETAILED ESTIMATE OF COST FOR ADDITIONAL RECREATIONAL FACILITIES

NIMROD LAKE

SUNLIGHT BAY PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Roads					
a. 18 feet wide (2-way)					
(1) Gravel	LF	\$12.75	3,100		
(2) Flexible pavement	do		1,150		
(a) New construction	do	19.00		742	\$14,100
(b) Existing gravel	do	3.50		1,943	6,800
(c) Existing gravel removed	do	2.00		550	1,100
(d) Existing pavement removed	do	4.80			
b. 12 feet wide (1-way)					
(1) Gravel	LF	8.50			
(2) Flexible pavement	do				
(a) New construction	do	12.00		3,700	44,400
(b) Existing gravel	do	2.50		680	1,700
(c) Existing gravel removed	do	1.90			
Parking areas					
a. Gravel	SY	5.00			
b. Flexible pavement	do				
(1) New construction	do	8.00		3,325	26,600
(2) Existing gravel	do	2.25		133	300
Launching lanes, concrete	Ea	30,000	1		
Camping spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500		23	11,500
(2) Existing gravel	do				
Trails					
a. Connecting	Mile	3,000			
b. Hiking	do	3,000		.13	400
c. Interpretive	do	10,000			
d. Motorcycle	do	1,200			
e. Benches	Ea	300			
f. Footbridges	do	1,500			

TABLE 11-3 (con.)

SUNLIGHT BAY PARK

Item	Unit	Unit Cost	Existing Facilities	Proposed Facilities	
			FY 1975 Quantity	Quantity	Cost
Park gates	Ea	\$ 500		2	\$1,000
Picnic units	Ea	500	7	50	25,000
Camp units					
a. Basic (including walk-in)	Ea	650	14	22	14,300
b. Add shelter	do	250	4		
c. Add electrical	do	200			
Table canopies	Ea	250			
Picnic shelters	Ea	12,100	1	1	12,100
Mercury vapor lights	Ea	500		1	500
Changehouses	Ea	8,500			
Swimming beaches	Ea	6,000			
Picnic spurs					
a. Gravel	Ea				
b. Flexible pavement	do				
(1) New construction	do	500			
(2) Existing gravel	do				
Amphitheaters	Ea	750			
Entrance complex	Ea	15,000			
Trailer sanitary station	Ea	4,400	1		
Drinking fountains	Ea	1,500		9	13,500
Toilets					
a. Masonry					
(1) Vault	Ea	20,000	2	1	20,000
(2) Waterborne	do	32,000			
(3) Waterborne with showers	do	34,000			
(4) Convert to waterborne	do	15,000			
b. Wooden, vault	do	12,000			
Water system					
a. Water line, 3/4" PVC	LF	1.75		1,143	2,000
b. Water line, 1" PVC	LF	2.50		1,240	3,100
c. Water line, 1½" PVC	LF	3.25			
d. Water line, 2" PVC	LF	3.90			
e. Gate valves, with boxes	Job				
f. Water wells	Ea	5,000	2	2	10,000
g. Wellhouse and equipment	Ea	13,100		2	26,200
h. Electrical	Job	2,500		2	5,000

TABLE 11-3 (con.)

SUNLIGHT BAY PARK						
Item	Unit	Unit Cost	Existing Facilities FY 1975 Quantity	Proposed Facilities		
				Quantity	Cost	
Sewer system						
a. Sewer lines, 4" PVC gravity	LF	\$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				
g. Treatment plant tertiary						
h. Lift station	Ea	16,000				
i. Electrical	Job					
Fence	LF	4.00				
Total					\$ 239,600	

SECTION XII

PROJECT RESOURCE MANAGEMENT

12-01. 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-C. That appendix will become a part of this updated master plan upon master plan approval.

12-02. Staffing and organization. The Resident Engineer and his staff, including the ranger force, will be trained in 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.

12-03. 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 public.

12-04. 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.

12-05. 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, news media releases, regular inspection of concession and recreation facilities, periodically scheduled employee safety meetings, and safety and first-aid demonstrations. In addition, various written manuals and directives on safety are kept in the project office for reference.

12-06. Concession activities. A concession is provided for the public for access and convenience, to enhance the recreation experience and accommodate the user at County Line Park. Services at the boat dock include boat and motor rental, gasoline, live and artificial bait and other tackle, snacks and cold drinks.

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.

A complete evaluation of adequacy of location and safety features of this facility is contained in the project resource management plan.

SECTION XIII

FOREST MANAGEMENT

13-01. General. The forest management plan for Nimrod 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-C, and it will become a part of this updated master plan.

13-02. 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.

13-03. Physical and ecological resources and characteristics. Forest cover types in the Nimrod project 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.

13-04. Treatments and programs. The forest management program contained in the forest management plan will be applied to a woodland area of 8,500 acres. This area has been divided into ten compartments of approximately 850 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 inundation will be replaced by water tolerant species. 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.

13-05. Personnel and fiscal requirements. Proper implementation of the forest management plan would require the following personnel: a landscape architect, a biologist, a forester, and two laborers. 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 at the Nimrod project, including salary requirements calculated on the basis of man-day estimates, forest fire fighting, construction of fire lanes, maintenance of fire trails, forest stand improvement, reforestation, and landscape repair in parks, is estimated at \$27,500. The total annual benefit from the forest management program is estimated at \$38,700; therefore, the net annual benefit would be approximately \$11,200.

13-06. Work plans. A forester 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.

13-07. Resource management. Project resource management personnel are responsible for supervision of the recreational resources of Nimrod Lake. They manage the use of the project lands and waters; recommend development in accordance with observed use; obtain compliance with the terms of leases, concessions and permits; protect and maintain Government property; and require high standards of public health and safety.

13-08. Facilities. Facilities such as roads, signs, utility lines, and structures shall be designed and located to harmonize with the surrounding landscape.

SECTION XIV

FIRE PROTECTION

14-01. 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.

14-02. 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 protect lands under the other's jurisdiction.

14-03. 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.

14-04. 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.

14-05. 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 XV
FISH AND WILDLIFE MANAGEMENT

15-01. General. The purpose of the plan is to provide for the systematic management of the land and water areas of Nimrod Lake in striving for the improvement of fish and wildlife potentials. The fish and wildlife management plan will be prepared and submitted in accordance with ER 1130-2-400 dated 28 May 1971. It will be submitted as Appendix D of 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.

15-02. Aquatic.

a. Management programs for aquatic fauna of the Nimrod project are aimed primarily at providing game fish which are desirable for recreational fishing. Native game fish found in the lake include large-mouth bass, white bass, yellow bass, warmouth, walleye, crappie, bream, sunfish, channel catfish, and yellow catfish. The fish and wildlife management plan contains detailed descriptions of the fish propagation, stocking, and research programs which have been conducted, as well as plans for future programs.

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

15-03. 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 turkey. 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 program of the state agency consists essentially of habitat improvement, provision of wild-

life 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 management.

SECTION XVI

PROJECT SAFETY

16-01. 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 include 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 June 1973. It was prepared as Appendix E to Design Memorandum No. 1-C and will become a part of this updated master plan.

16-02. General program guidelines. Program guidelines have been established for the major phases and areas of project operation at Nimrod Lake. These include guidelines pertaining to administration facilities, structures, sanitation, access, park facilities, and public information procedures.

16-03. 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.

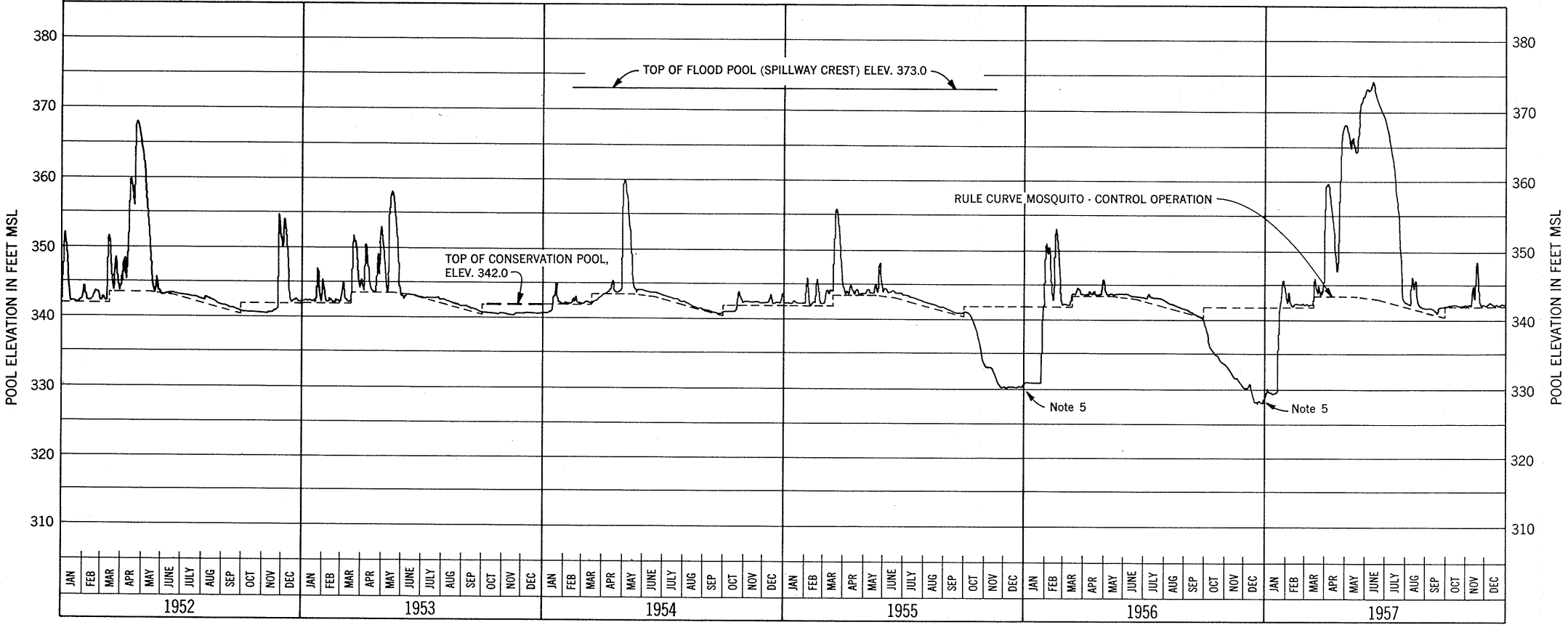
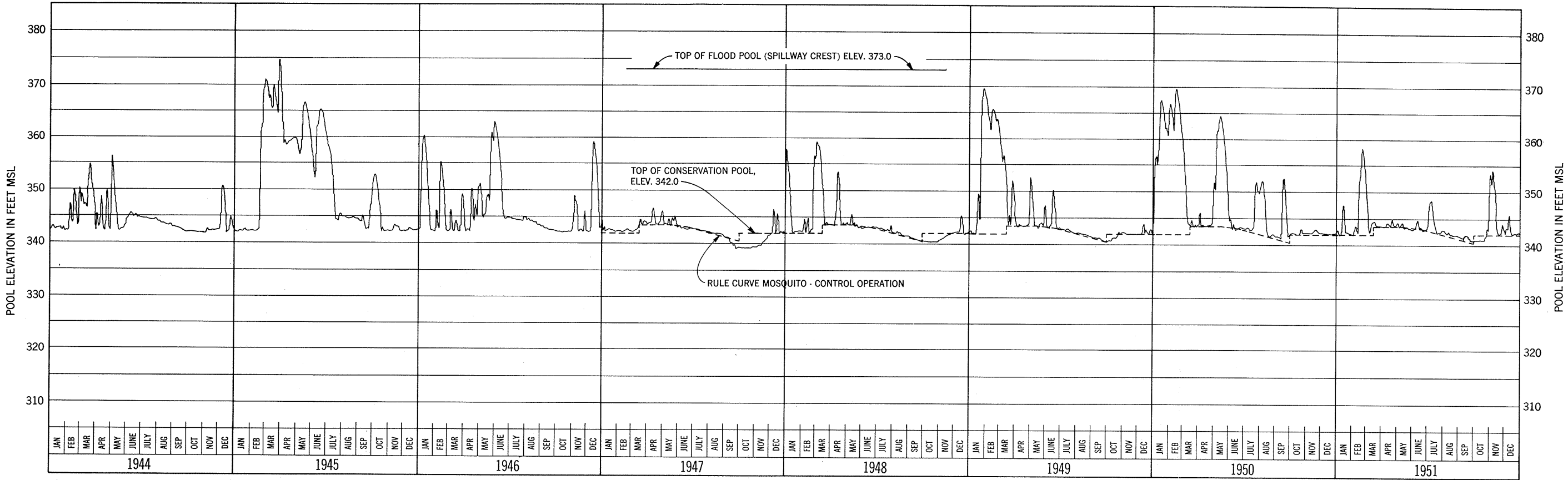
16-04. Employee. It is the policy of the Corps of Engineers that no employee shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety. Accordingly, appropriate sanitation procedures and safety precautions have been implemented and an equipment monitoring system instituted in compliance with the Corps safety regulations.

SECTION XVII

CONCLUSIONS AND RECOMMENDATIONS

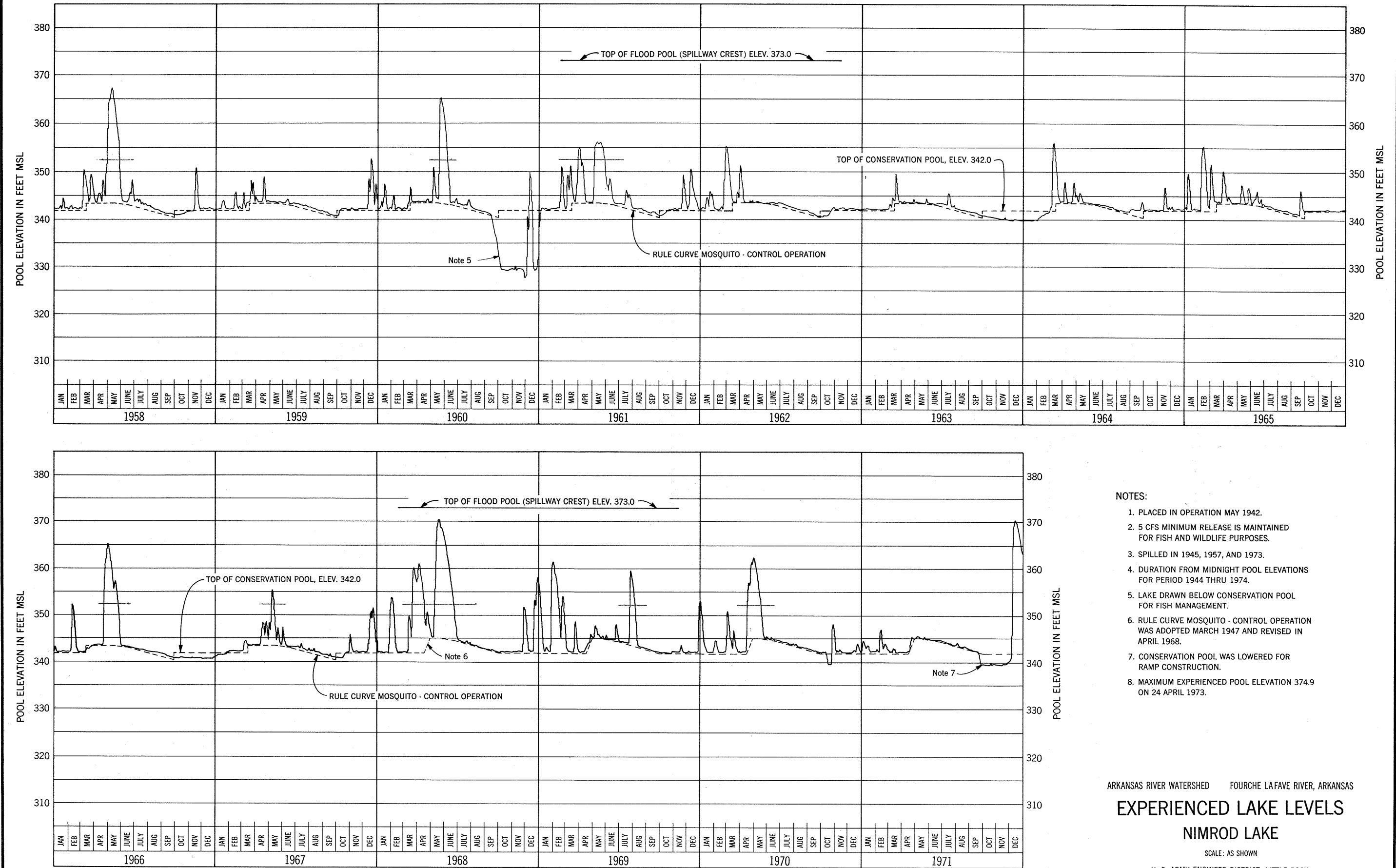
17-01. Conclusions. The plan of development herein has been formulated with all interested Federal and State agencies as explained in Section IX. Prior to the preparation of the updated plan, interested agencies were requested to apprise the Corps of Engineers of any additional land requirements, and a negative reply was received from all agencies.

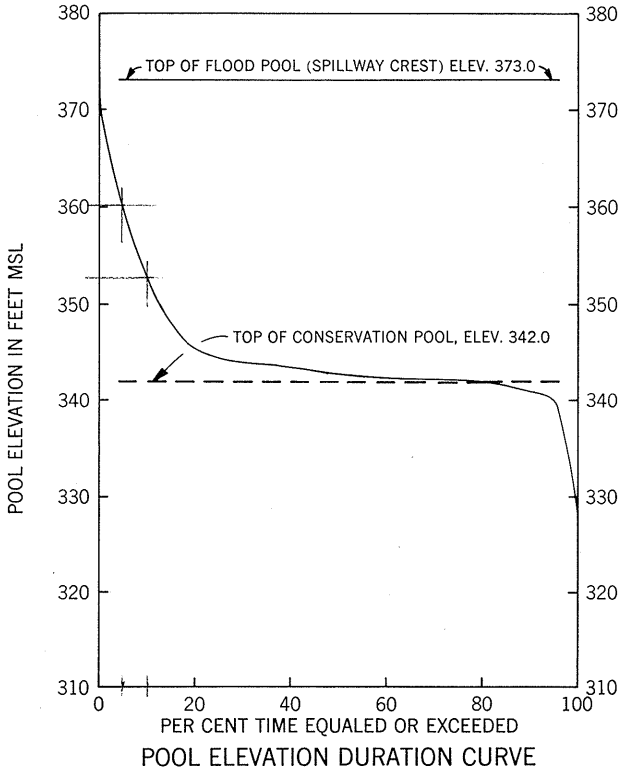
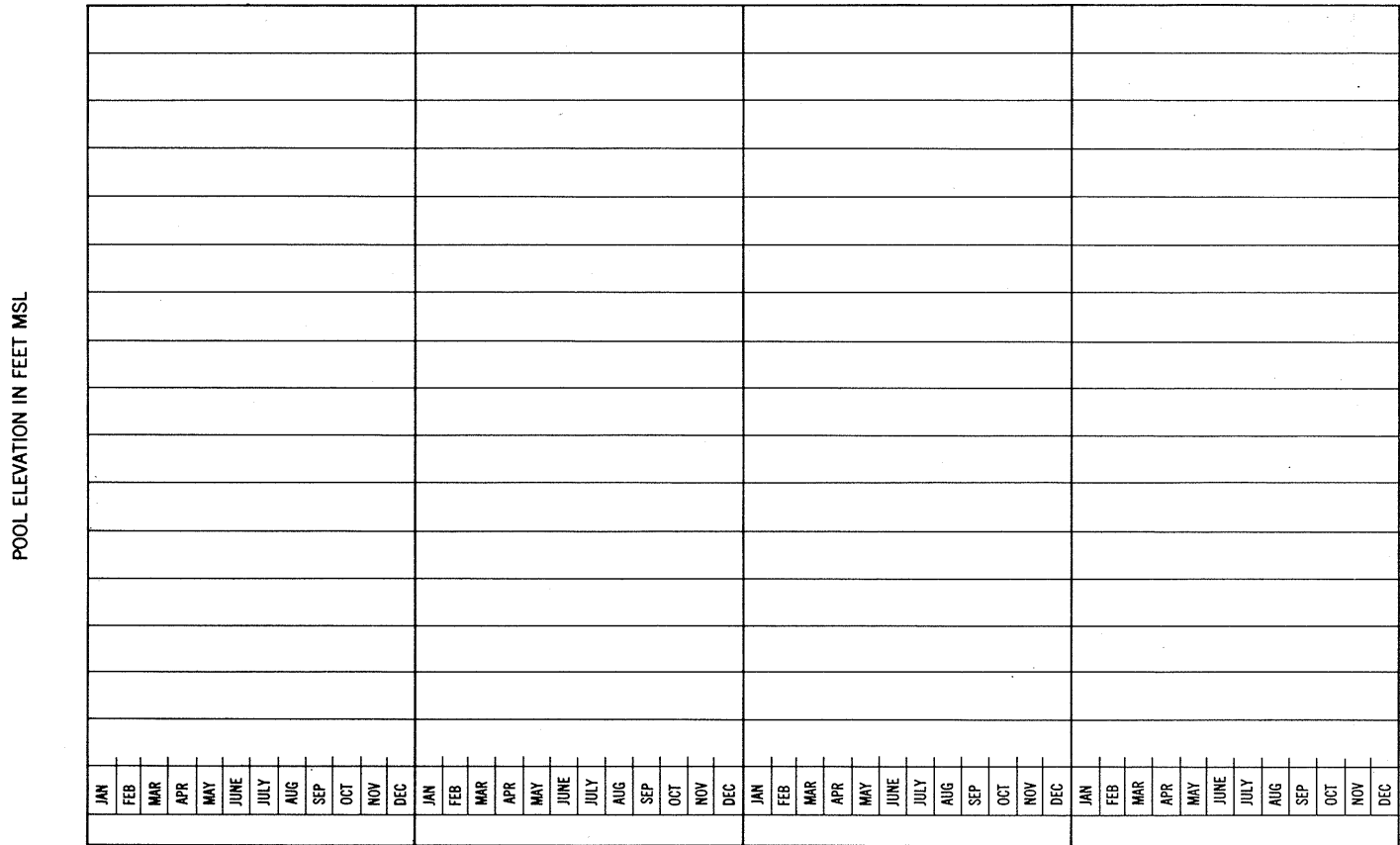
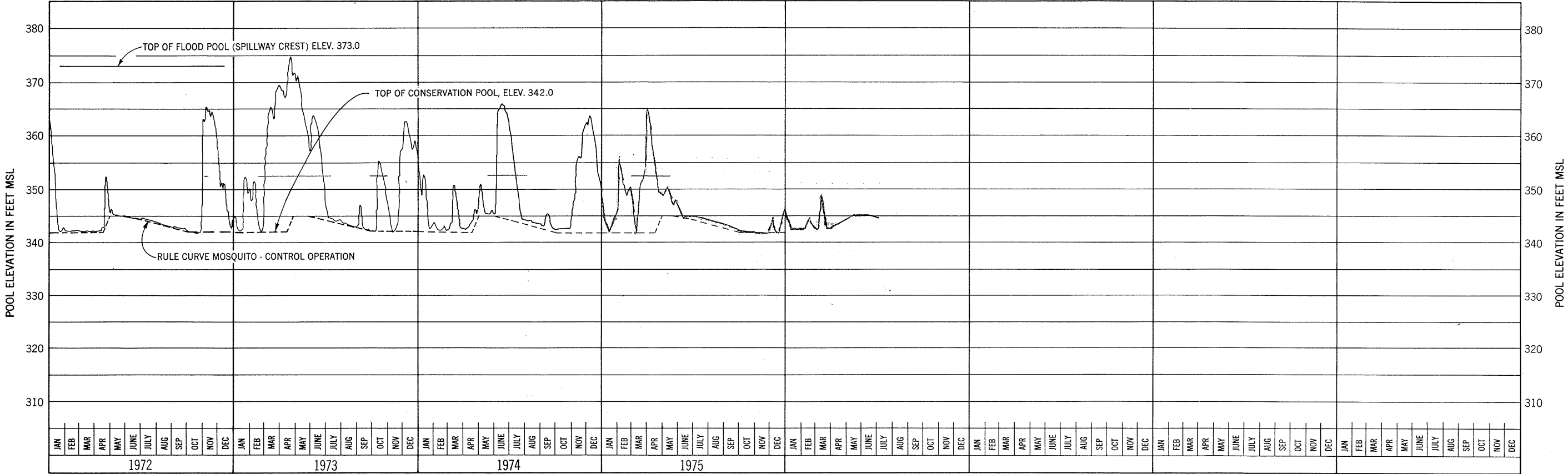
17-02. Recommendations. It is recommended that this plan be approved as a basis for land and water utilization, management activities, further development of the existing parks, and retention of the areas for future recreational use.



- NOTES:
1. PLACED IN OPERATION MAY 1942.
 2. 5 CFS MINIMUM RELEASE IS MAINTAINED FOR FISH AND WILDLIFE PURPOSES.
 3. SPILLED IN 1945, 1957, AND 1973.
 4. DURATION FROM MIDNIGHT POOL ELEVATIONS FOR PERIOD 1944 THRU 1974.
 5. LAKE DRAWN BELOW CONSERVATION POOL FOR FISH MANAGEMENT.
 6. RULE CURVE MOSQUITO - CONTROL OPERATION WAS ADOPTED MARCH 1947 AND REVISED IN APRIL 1968.
 7. CONSERVATION POOL WAS LOWERED FOR RAMP CONSTRUCTION.
 8. MAXIMUM EXPERIENCED POOL ELEVATION 374.9 ON 24 APRIL 1973.

ARKANSAS RIVER WATERSHED FOURCHE LAFAVE RIVER, ARKANSAS
EXPERIENCED LAKE LEVELS
NIMROD LAKE
SCALE: AS SHOWN
U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEBRUARY 1973





- NOTES:
1. PLACED IN OPERATION MAY 1942.
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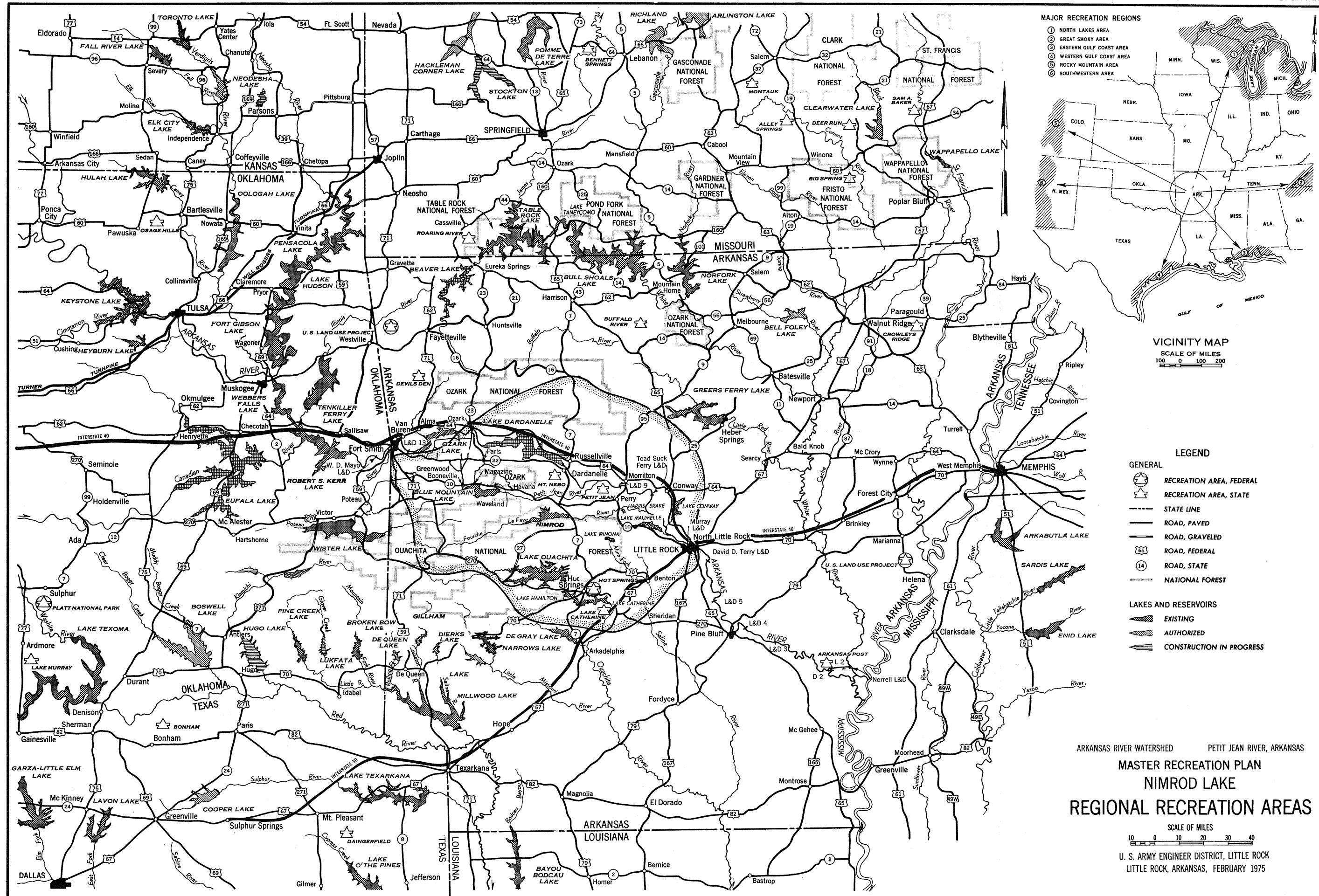
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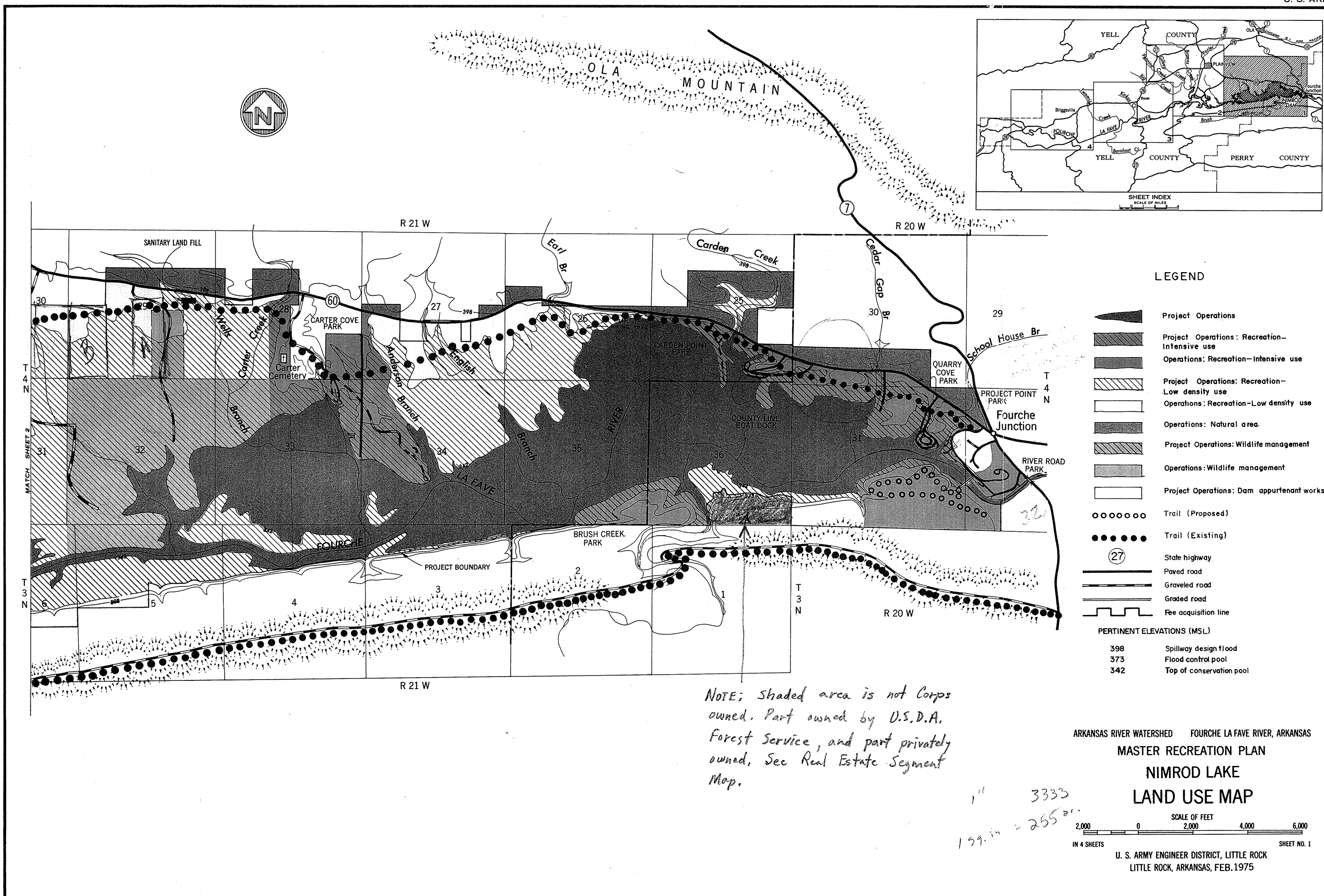
EXPERIENCED LAKE LEVELS

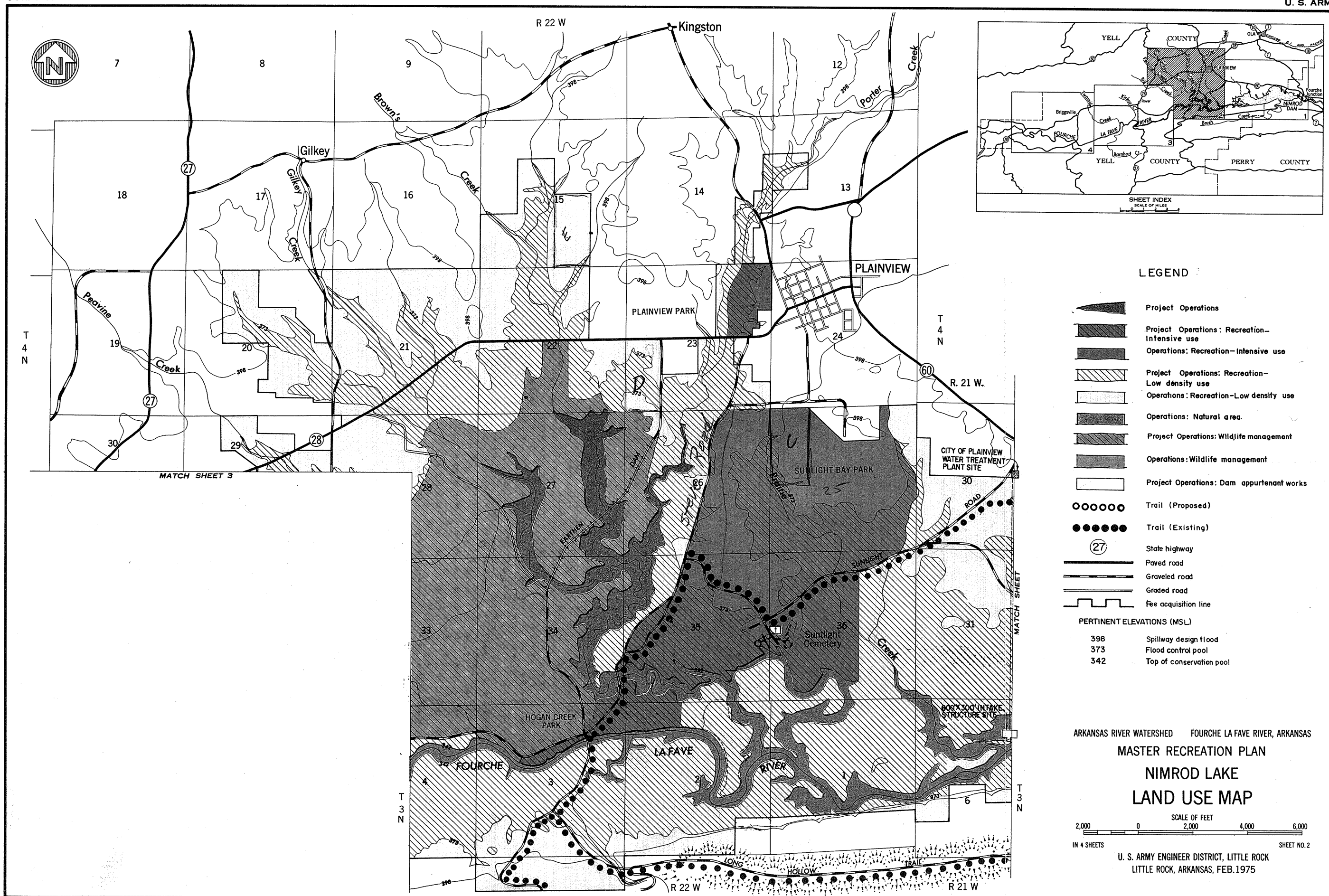
NIMROD LAKE

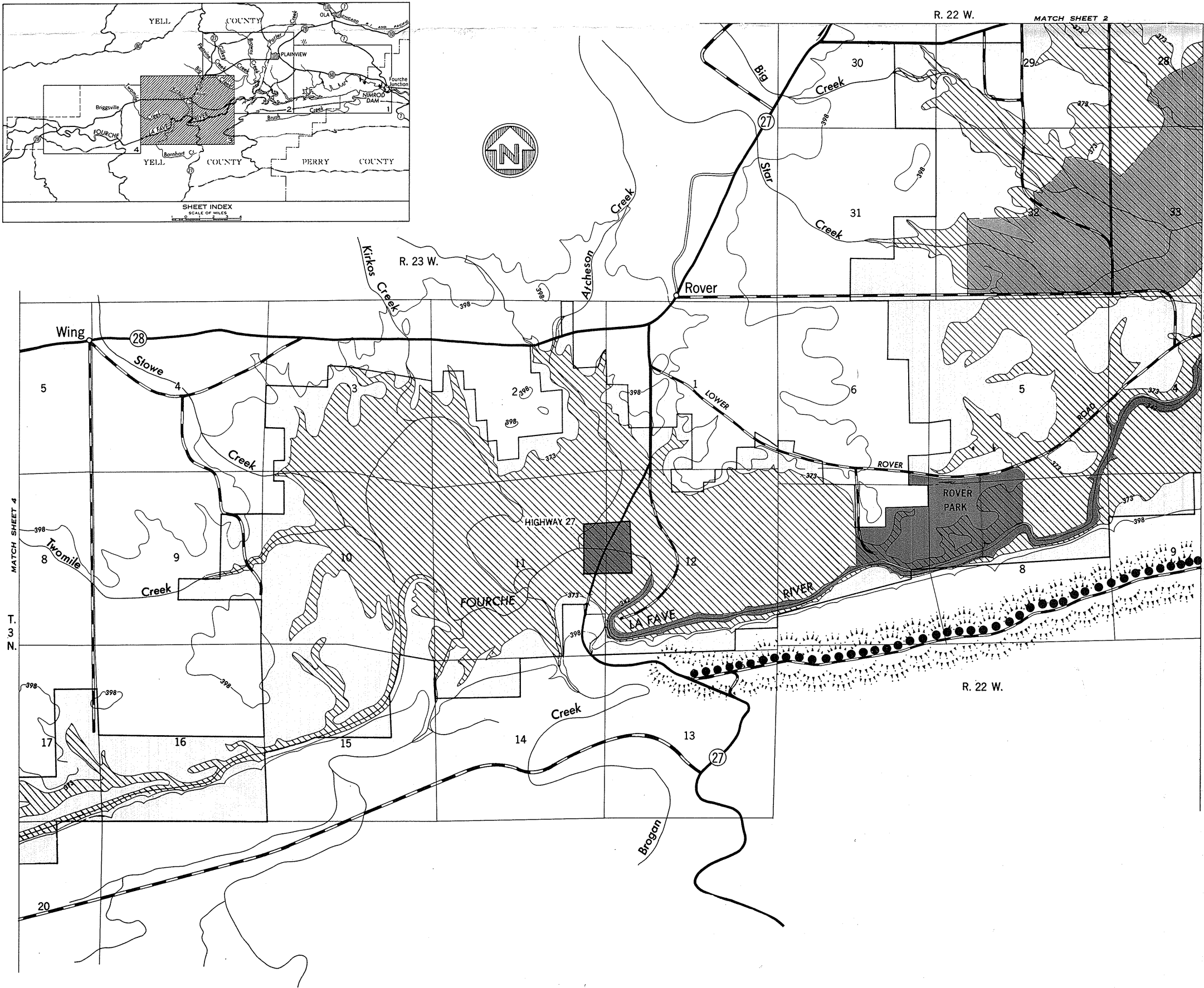
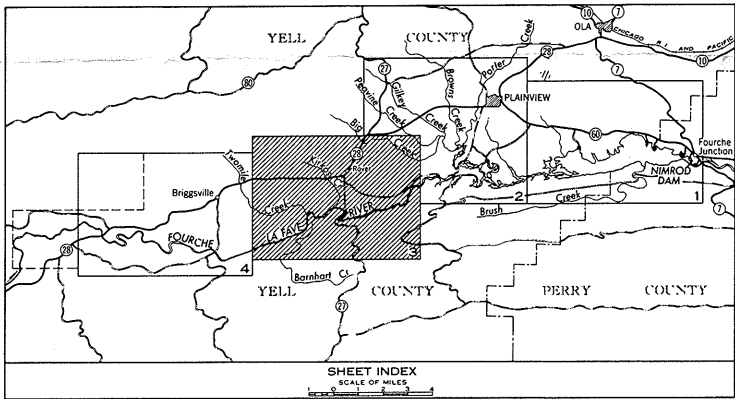
SCALE: AS SHOWN

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









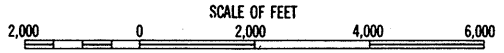
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- Project Operations
- Project Operations: Recreation-Intensive use
- Operations: Recreation-Intensive use
- Project Operations: Recreation-Low density use
- Operations: Recreation-Low density use
- Operations: Natural area
- Project Operations: Wildlife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

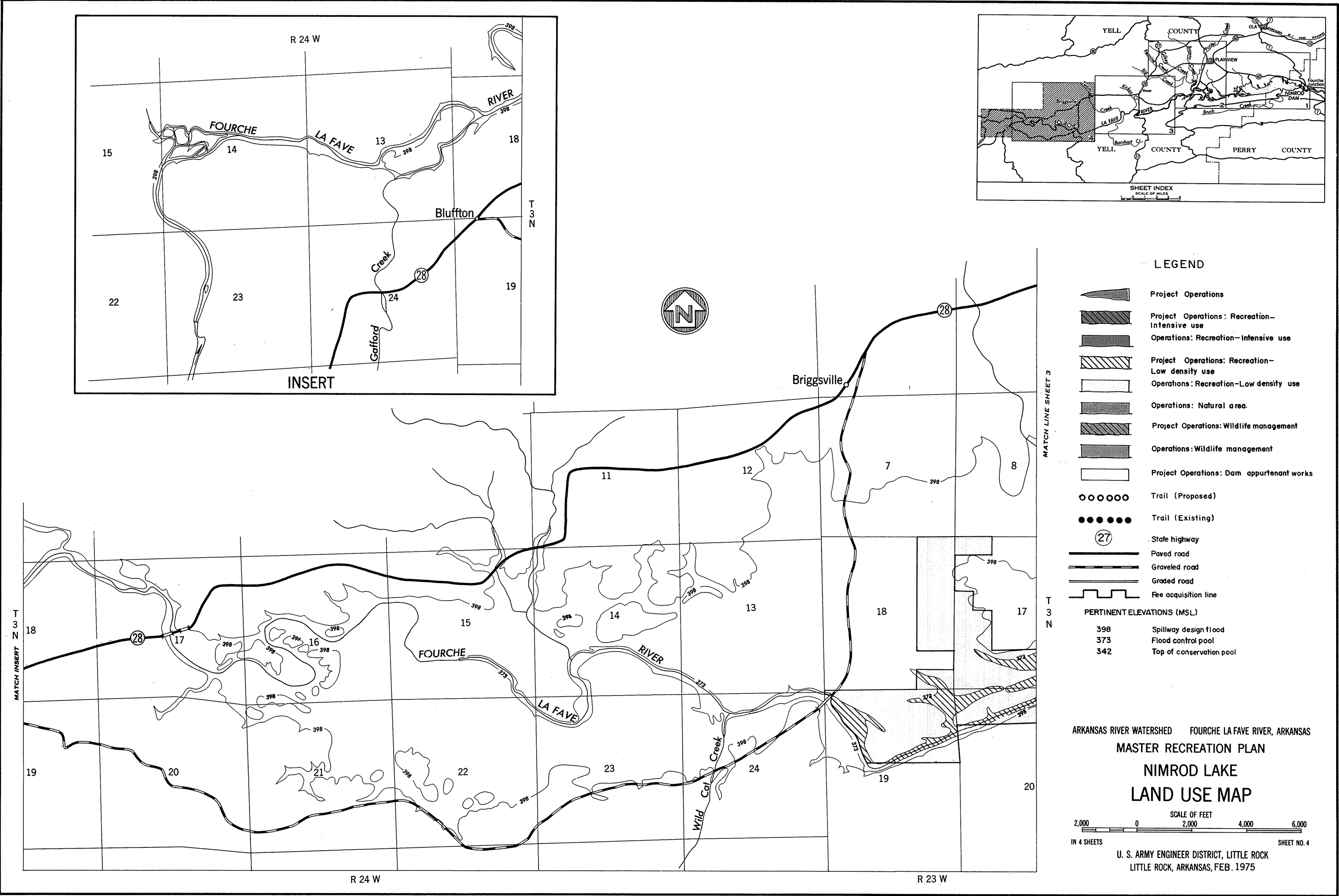
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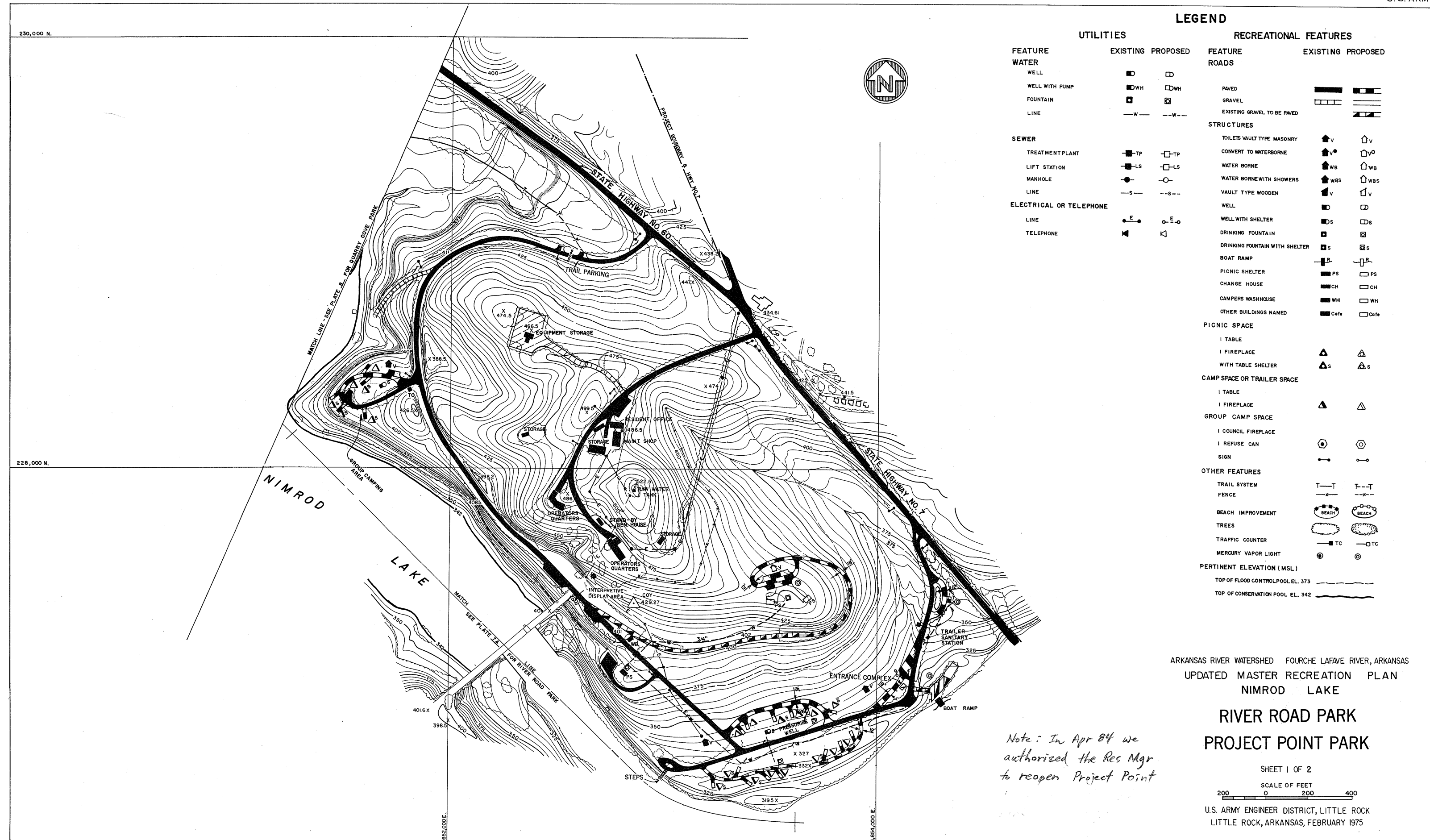
- 398 Spillway design flood
- 373 Flood control pool
- 342 Top of conservation pool

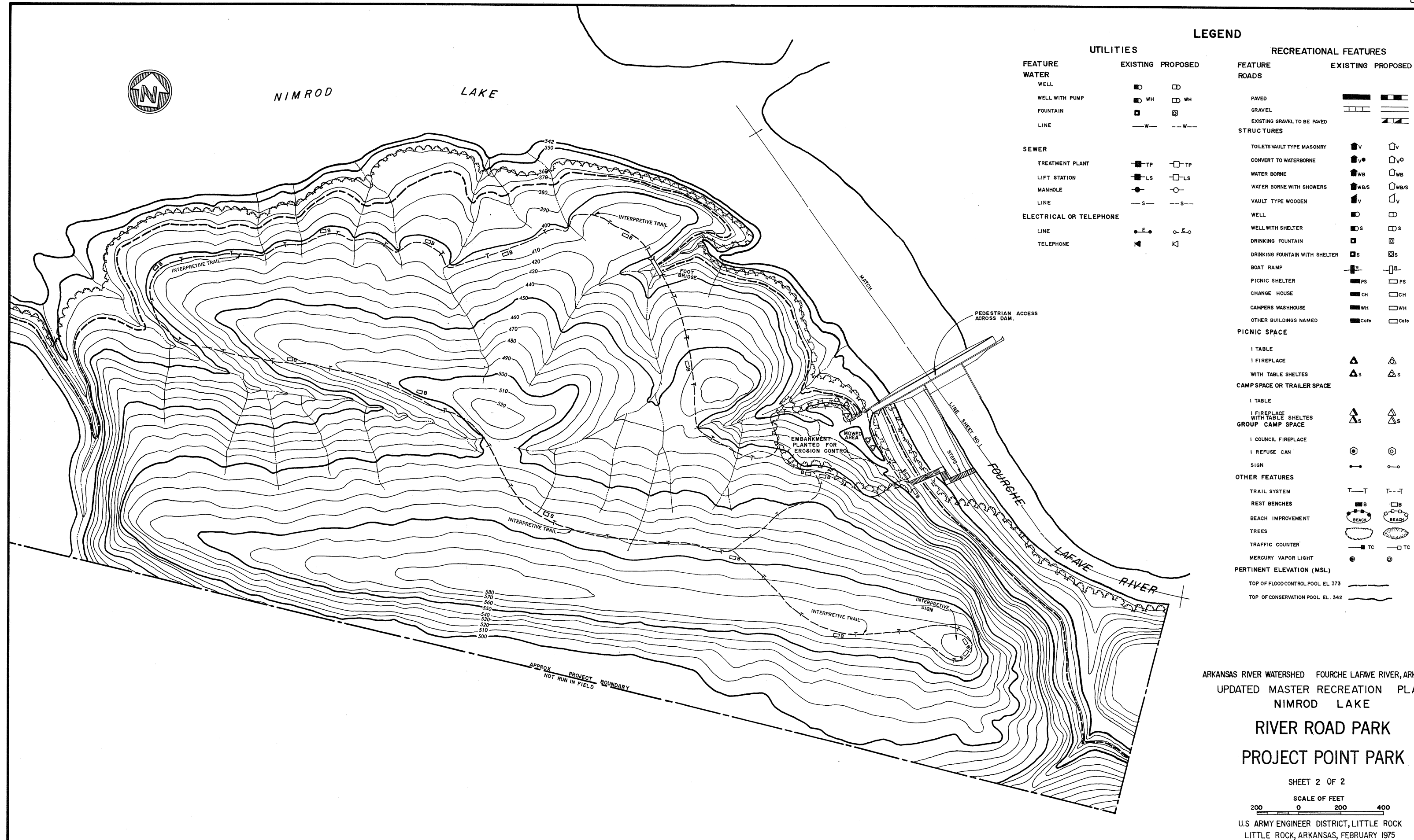
ARKANSAS RIVER WATERSHED FOURCHE LA FAVE RIVER, ARKANSAS
MASTER RECREATION PLAN
NIMROD LAKE
LAND USE MAP

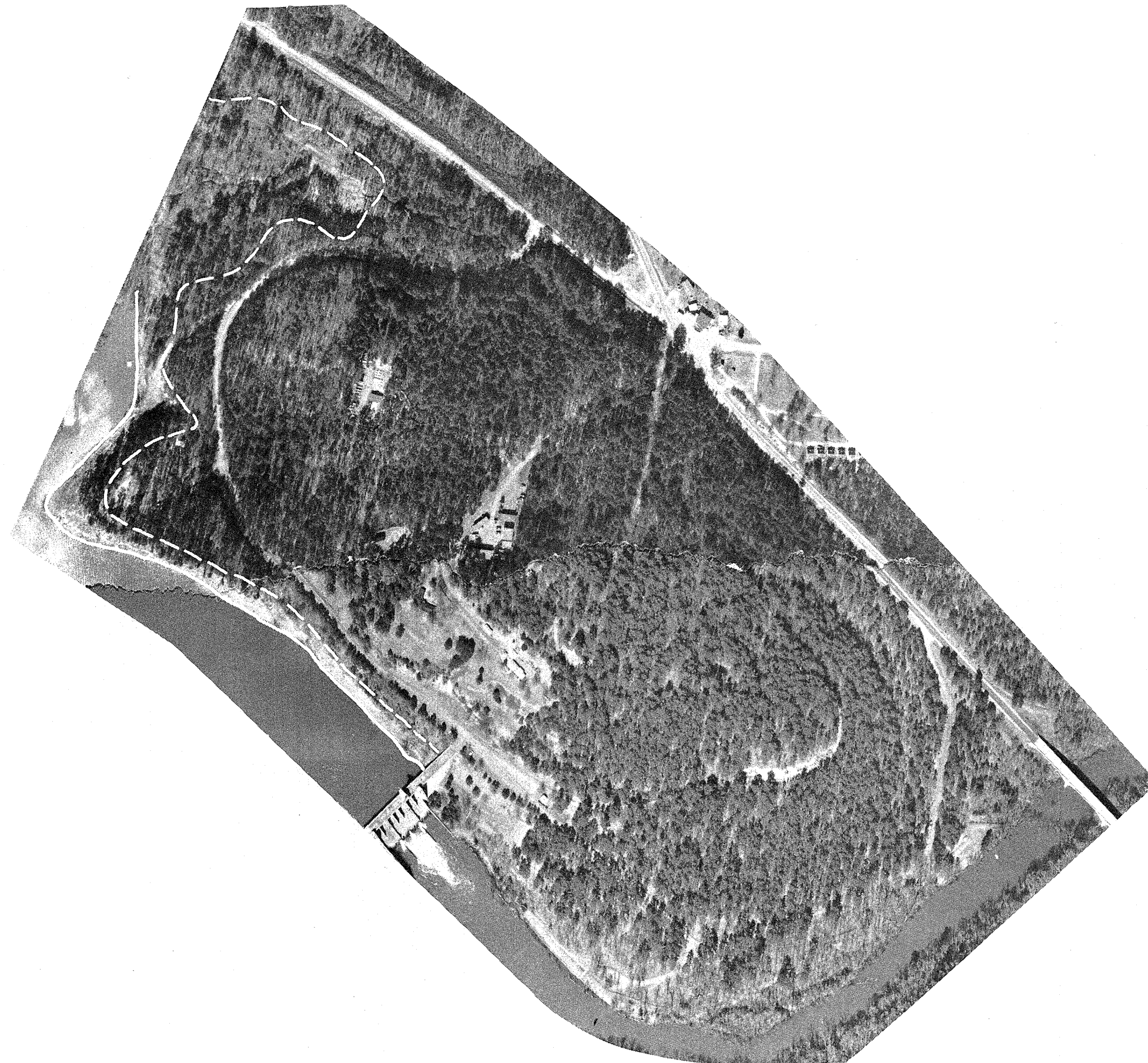


U. S. ARMY ENGINEER DISTRICT, LITTLE ROCK
LITTLE ROCK, ARKANSAS, FEB.1975









LEGEND
----- PROJECT BOUNDARY
----- TOP OF FLOOD CONTROL POOL EL. 373
----- TOP OF CONSERVATION POOL EL. 342
PREPARED FROM AERIAL PHOTOGRAPHS FLOWN
FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

ARKANSAS RIVER WATERSHED FOURCHE LAFAVE RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
NIMROD LAKE

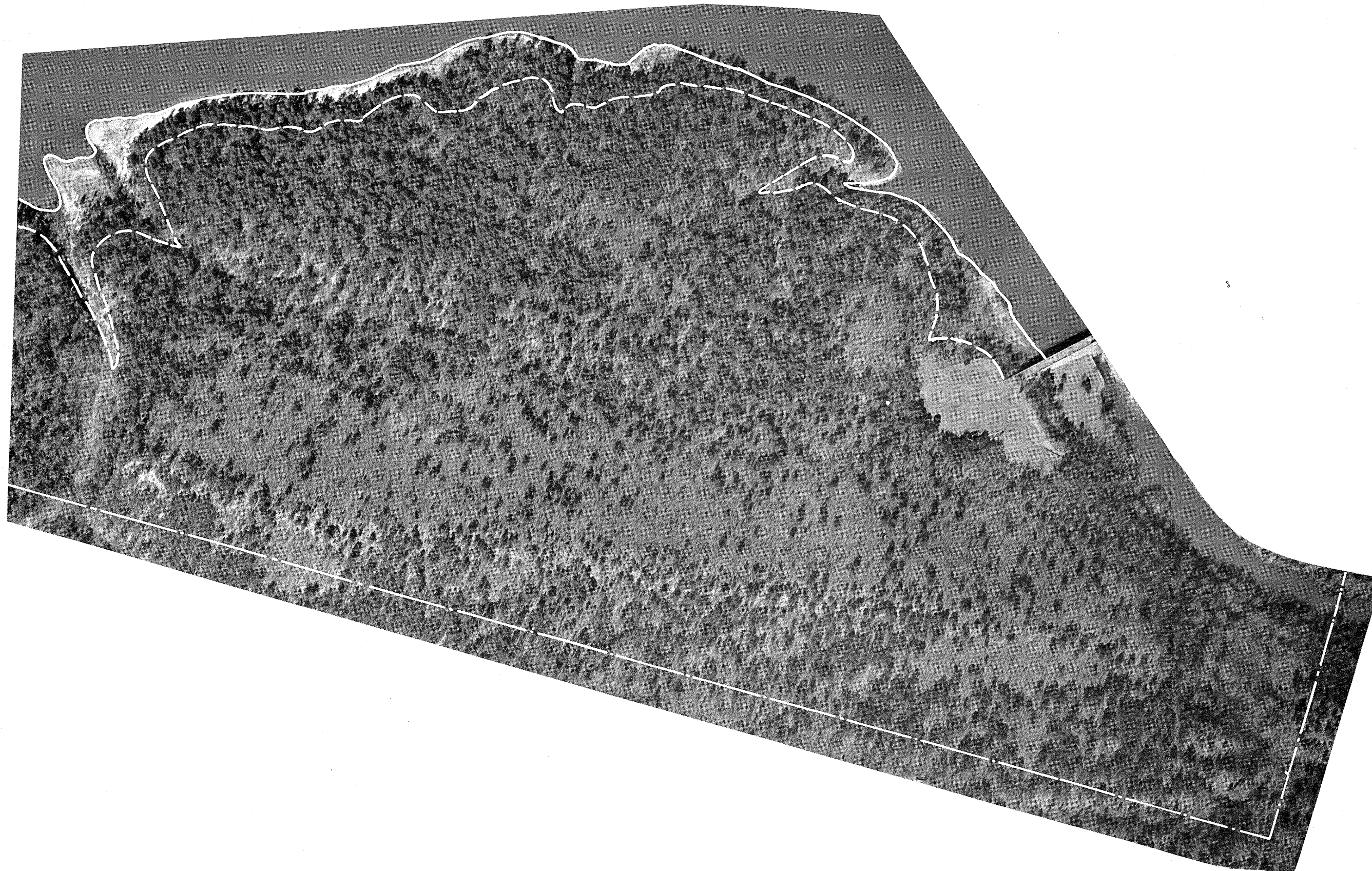
RIVER ROAD PARK
PROJECT POINT PARK

SHEET 1 OF 2

SCALE OF FEET
0 200 400

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

PLATE 7 B



LEGEND

- PROJECT BOUNDARY
 - TOP OF FLOOD CONTROL POOL EL. 373
 - TOP OF CONSERVATION POOL EL. 342
- PREPARED FROM AERIAL PHOTOGRAPHS FLOWN
FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

ARKANSAS RIVER WATERSHED FOURCHE LAFAVE RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
NIMROD LAKE

RIVER ROAD PARK

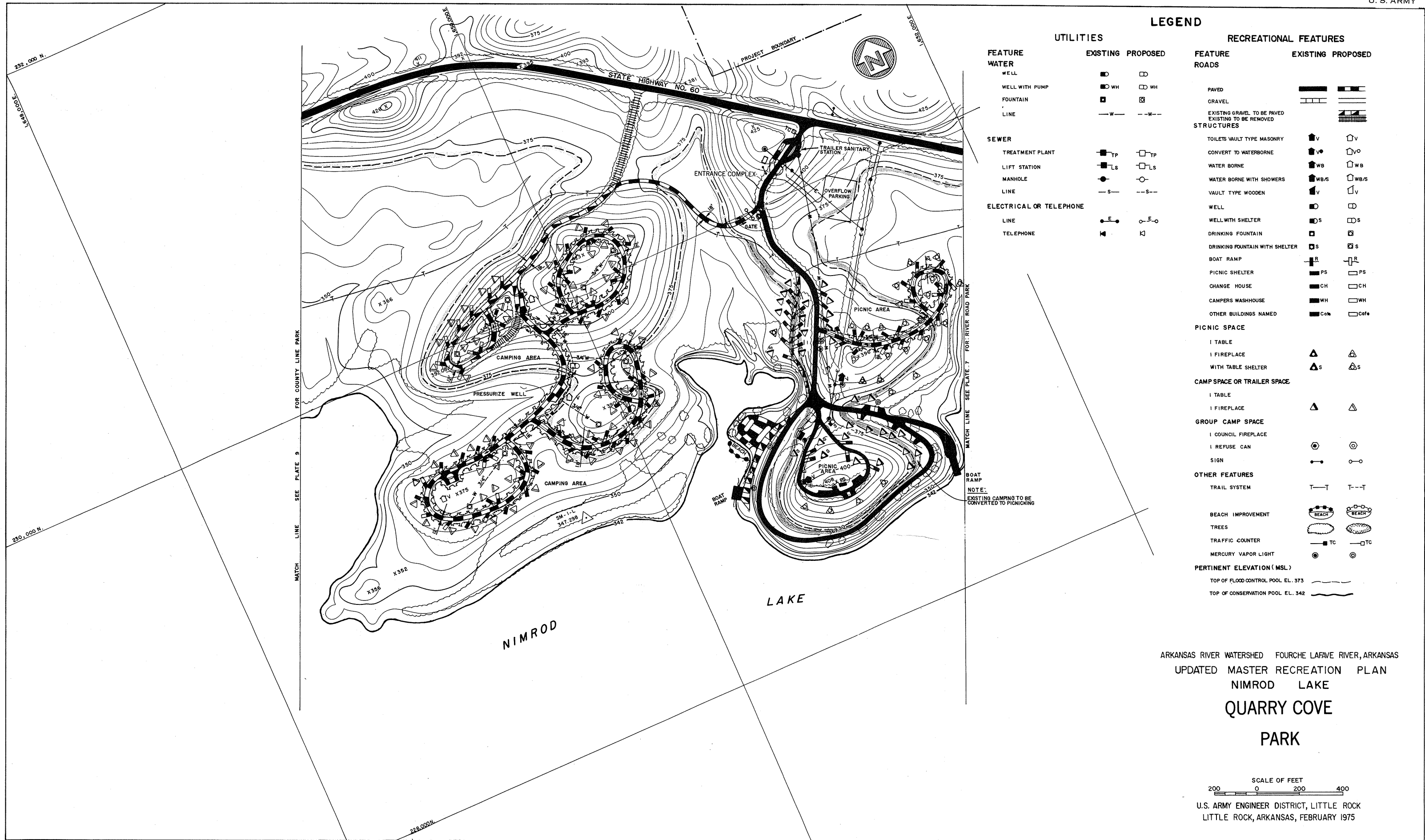
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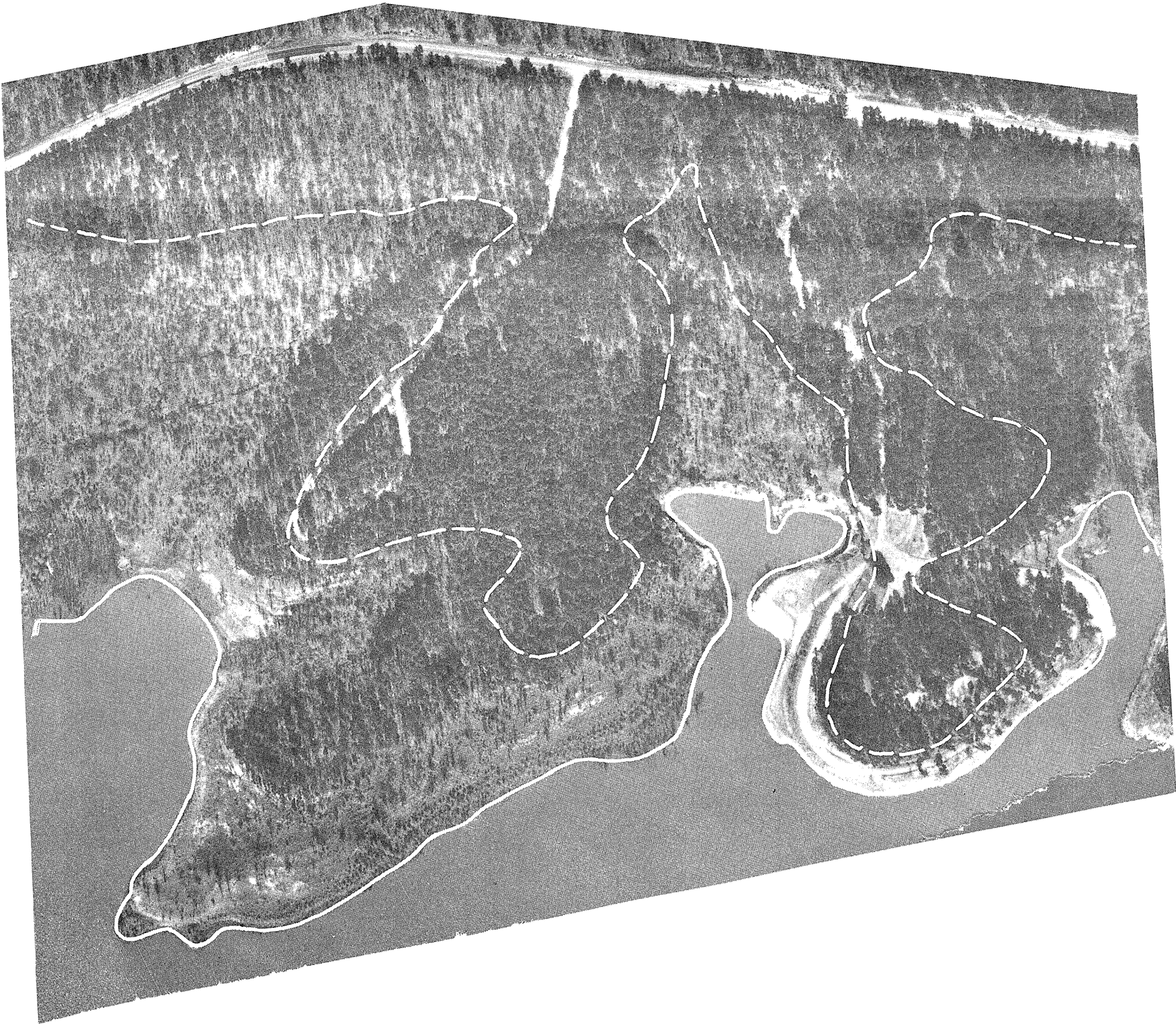
SHEET 2 OF 2

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

PLATE 7 C





LEGEND

- PROJECT BOUNDARY
 - TOP OF FLOOD CONTROL POOL EL. 373
 - TOP OF CONSERVATION POOL EL. 342
- PREPARED FROM AERIAL PHOTOGRAPHS FLOWN
FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

ARKANSAS RIVER WATERSHED FOURCHE LAFAVE RIVER, ARKANSAS

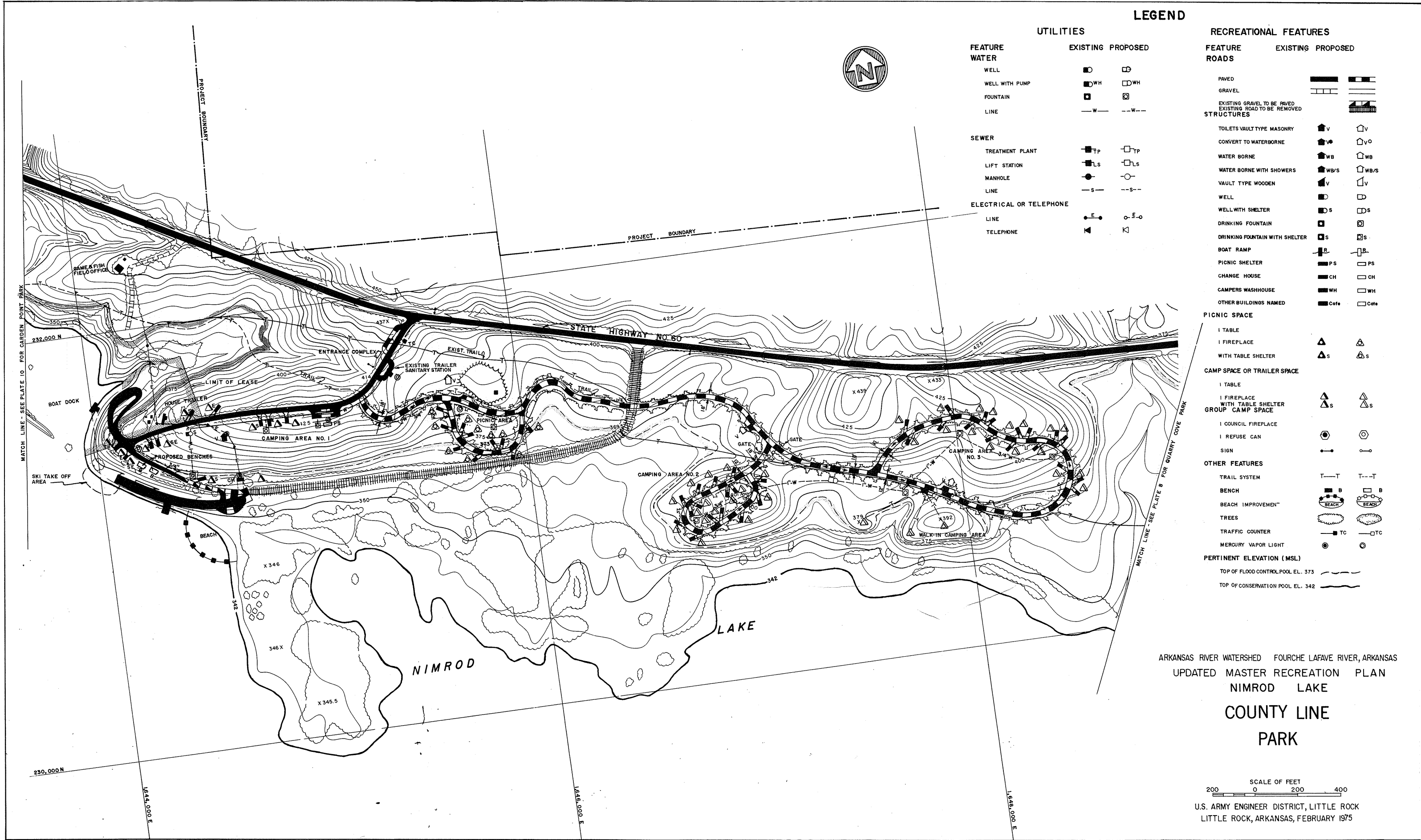
UPDATED MASTER RECREATION PLAN
NIMROD LAKE

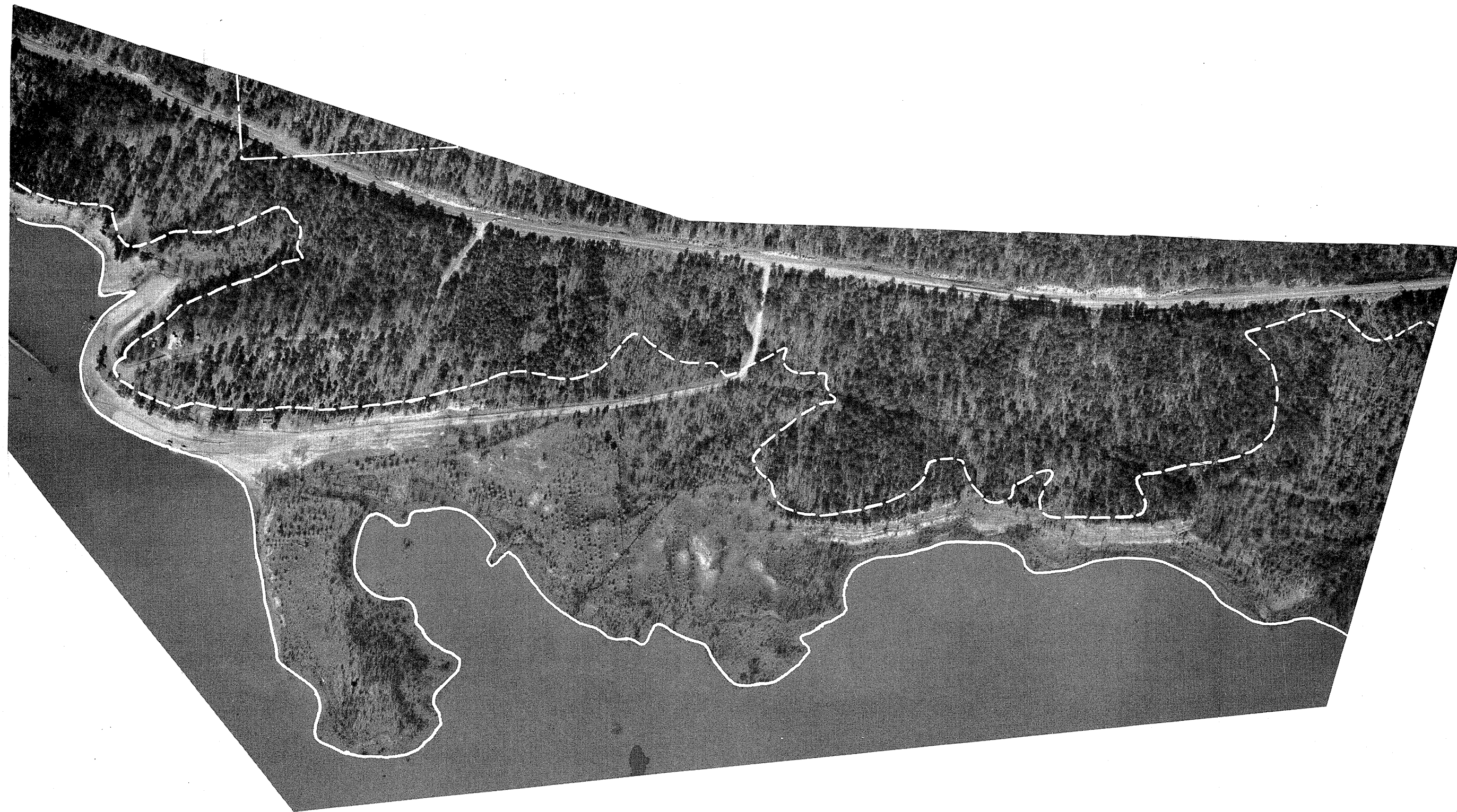
QUARRY COVE

PARK

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

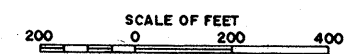




LEGEND

- PROJECT BOUNDARY
 - TOP OF FLOOD CONTROL POOL EL. 373
 - TOP OF CONSERVATION POOL EL. 342
- PREPARED FROM AERIAL PHOTOGRAPHS FLOWN
FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

ARKANSAS RIVER WATERSHED FOURCHE LAFAVE RIVER, ARKANSAS
UPDATED MASTER RECREATION PLAN
NIMROD LAKE
COUNTY LINE
PARK



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

PLATE '9A

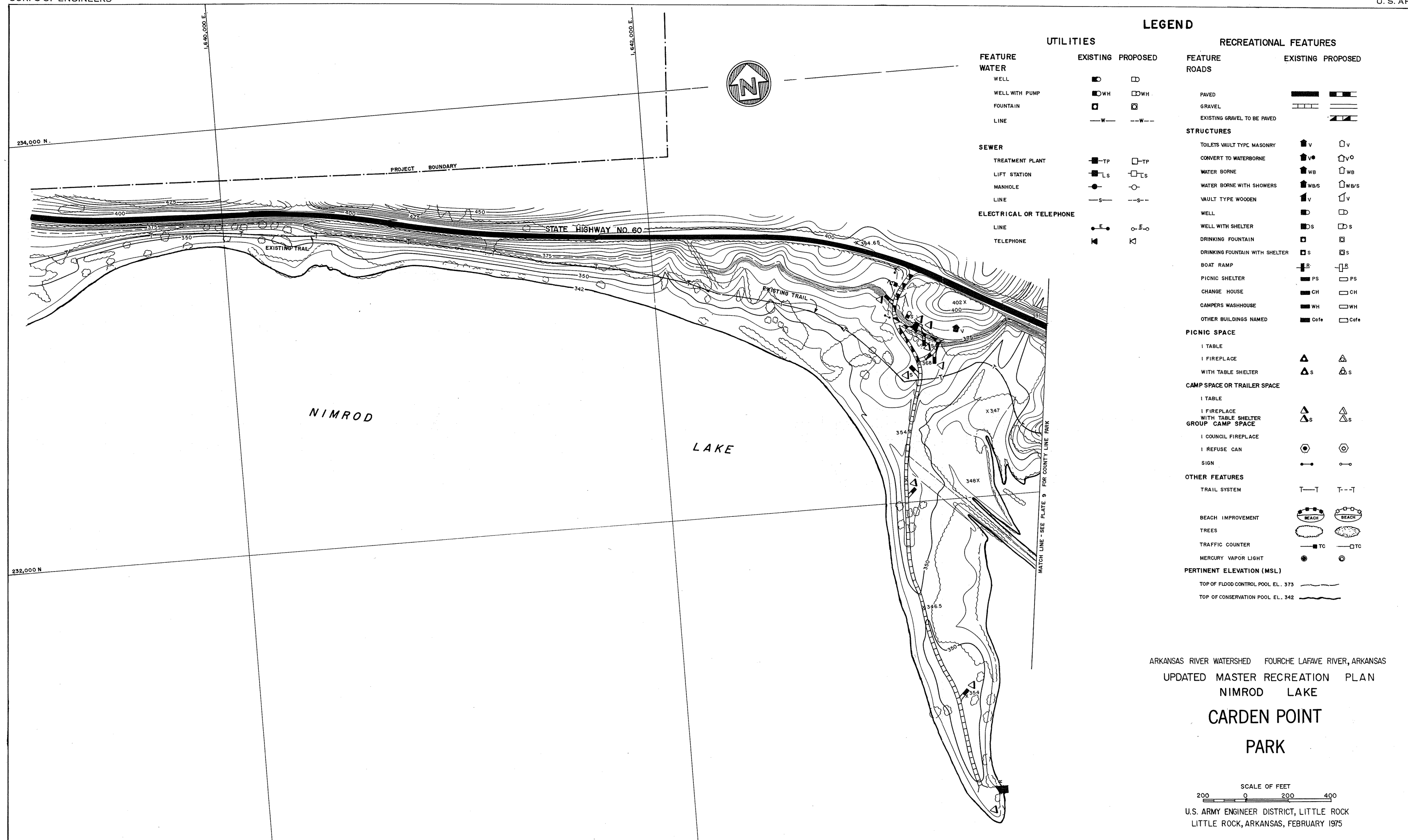


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 FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

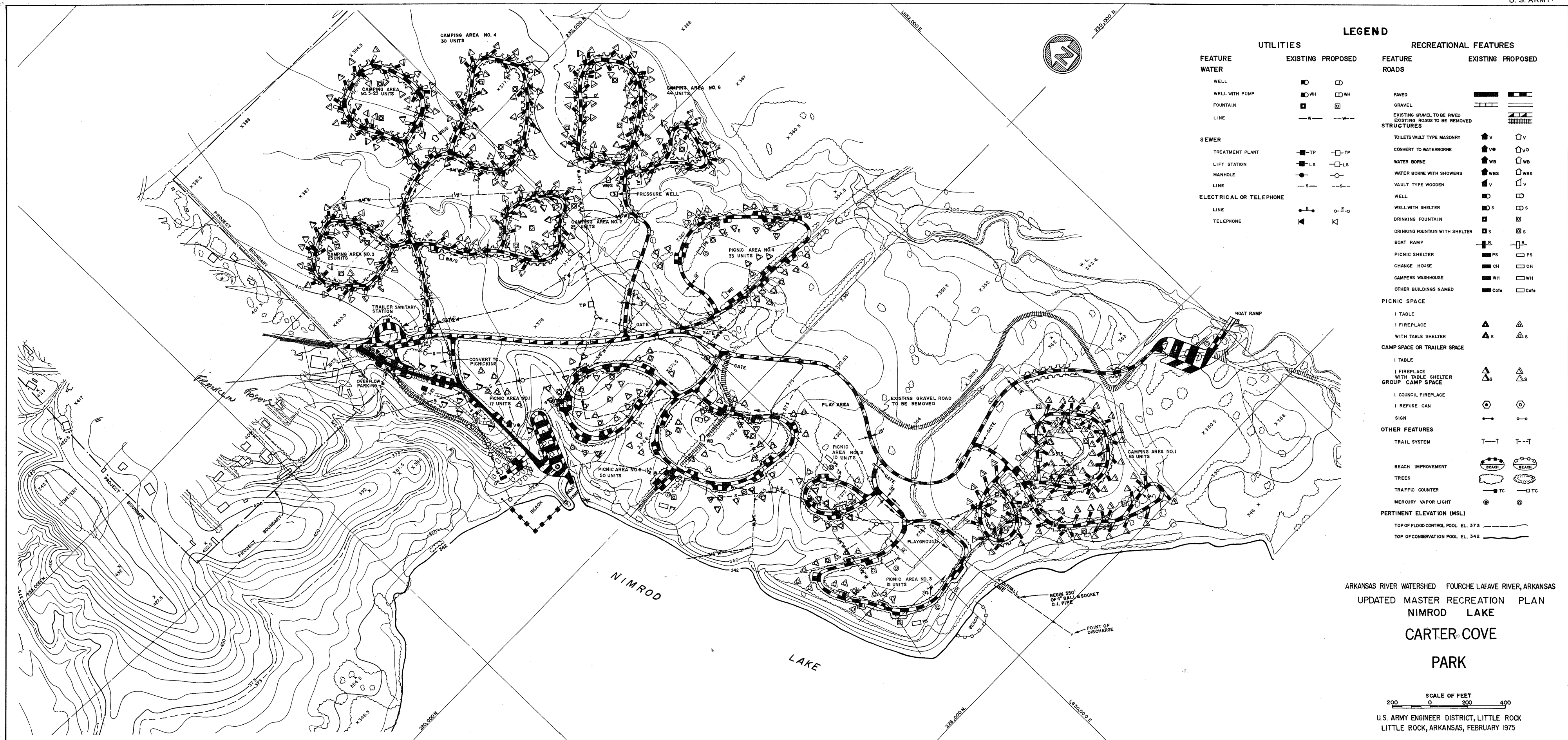
ARKANSAS RIVER WATERSHED FOURCHE LAFAYE RIVER, ARKANSAS  
 UPDATED MASTER RECREATION PLAN  
**NIMROD LAKE**  
**CARDEN POINT**  
**PARK**



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











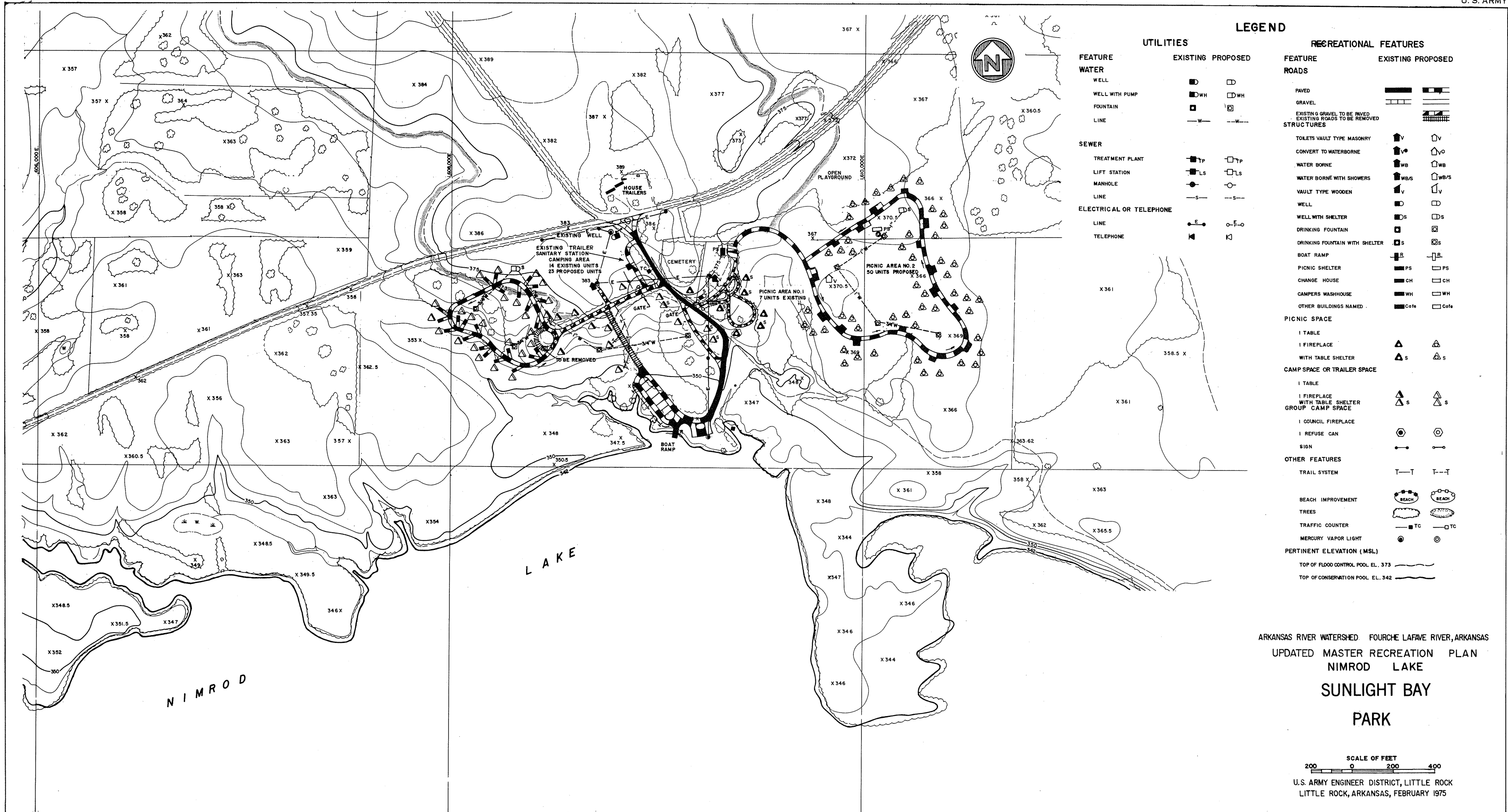
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--- TOP OF CONSERVATION POOL EL. 342  
PREPARED FROM AERIAL PHOTOGRAPHS FLOWN  
FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

ARKANSAS RIVER WATERSHED FOURCHE LA FAVE RIVER, ARKANSAS  
UPDATED MASTER RECREATION PLAN  
NIMROD LAKE  
CARTER COVE  
PARK



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









LEGEND

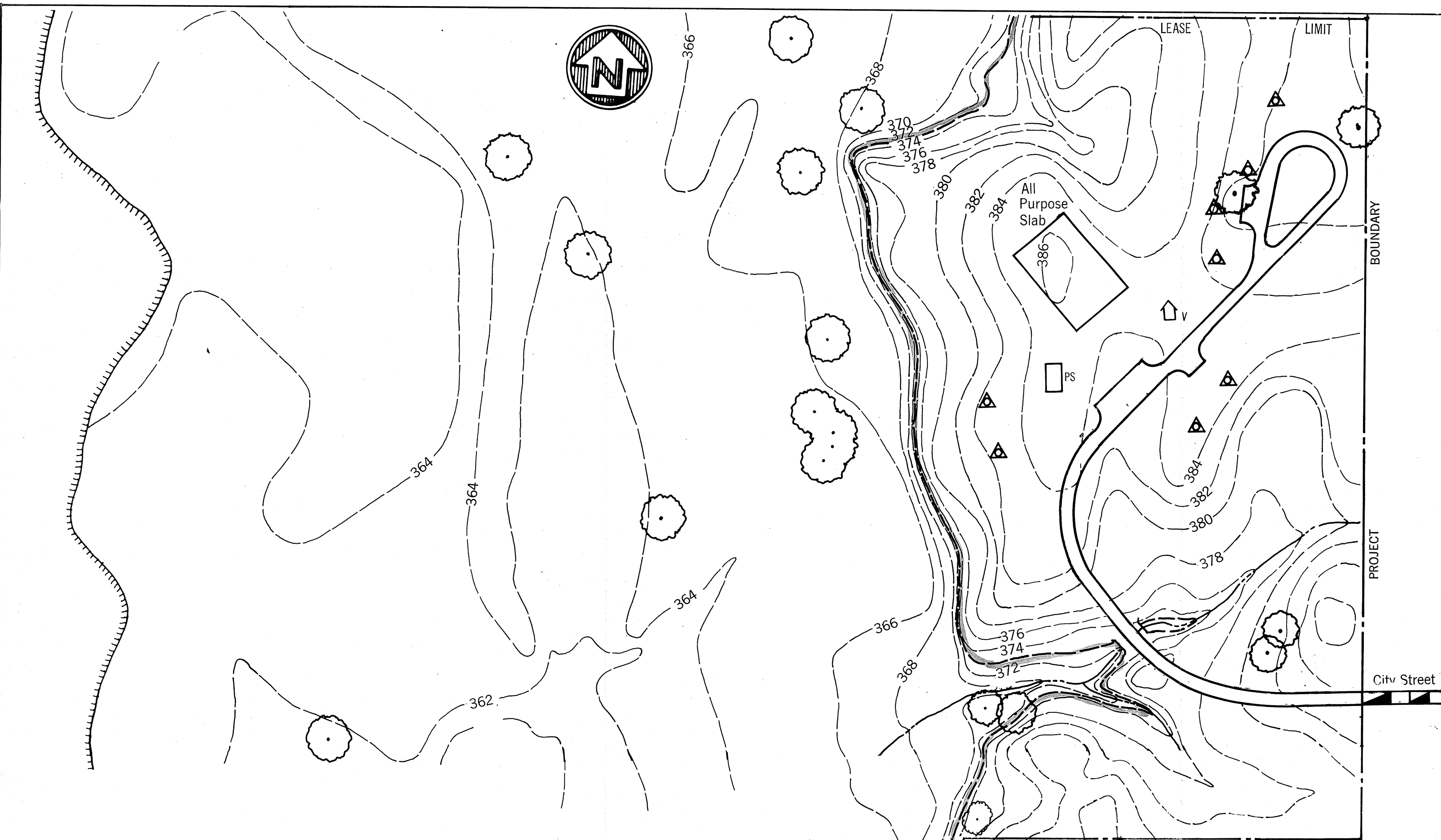
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FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

ARKANSAS RIVER WATERSHED FOURCHE LAFAYETTE RIVER, ARKANSAS  
UPDATED MASTER RECREATION PLAN  
NIMROD LAKE  
SUNLIGHT BAY  
PARK



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





| LEGEND                            |          |          |
|-----------------------------------|----------|----------|
| RECREATIONAL FEATURES             |          |          |
| FEATURE                           | EXISTING | PROPOSED |
| ROADS                             |          |          |
| PAVED                             |          |          |
| GRAVEL                            |          |          |
| EXISTING GRAVEL TO BE PAVED       |          |          |
| STRUCTURES                        |          |          |
| TOILETS VAULT TYPE MASONRY        |          |          |
| CONVERT TO WATERBORNE             |          |          |
| WATER BORNE                       |          |          |
| WATER BORNE WITH SHOWERS          |          |          |
| VAULT TYPE WOODEN                 |          |          |
| WELL                              |          |          |
| WELL WITH SHELTER                 |          |          |
| DRINKING FOUNTAIN                 |          |          |
| DRINKING FOUNTAIN WITH SHELTER    |          |          |
| BOAT RAMP                         |          |          |
| PICNIC SHELTER                    |          |          |
| CHANGE HOUSE                      |          |          |
| CAMPERS WASHHOUSE                 |          |          |
| OTHER BUILDINGS NAMED             |          |          |
| PICNIC SPACE                      |          |          |
| 1 TABLE                           |          |          |
| 1 FIREPLACE                       |          |          |
| WITH TABLE SHELTER                |          |          |
| CAMP SPACE OR TRAILER SPACE       |          |          |
| 1 TABLE                           |          |          |
| 1 FIREPLACE                       |          |          |
| GROUP CAMP SPACE                  |          |          |
| 1 COUNCIL FIREPLACE               |          |          |
| 1 REFUSE CAN                      |          |          |
| SIGN                              |          |          |
| OTHER FEATURES                    |          |          |
| TRAIL SYSTEM                      |          |          |
| BEACH IMPROVEMENT                 |          |          |
| TREES                             |          |          |
| TRAFFIC COUNTER                   |          |          |
| MERCURY VAPOR LIGHT               |          |          |
| PERTINENT ELEVATION (MSL)         |          |          |
| TOP OF FLOOD CONTROL POOL EL. 373 |          |          |
| TOP OF CONSERVATION POOL EL. 342  |          |          |

ARKANSAS RIVER WATERSHED FOURCHE LAFAVE RIVER, ARKANSAS  
 UPDATED MASTER RECREATION PLAN  
 NIMROD LAKE

## PLAINVIEW CITY PARK

SCALE OF FEET  
 0 50 100

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





**LEGEND**  
--- PROJECT BOUNDARY  
--- TOP OF FLOOD CONTROL POOL EL. 373  
--- TOP OF CONSERVATION POOL EL. 342  
PREPARED FROM AERIAL PHOTOGRAPHS FLOWN  
FEBRUARY 1973 WHEN POOL WAS AT EL. 343.6

ARKANSAS RIVER WATERSHED FOURCHE LAFAYE RIVER, ARKANSAS  
UPDATED MASTER RECREATION PLAN  
NIMROD LAKE

PLAINVIEW  
CITY PARK

SCALE OF FEET  
0 100 200  
U.S. ARMY ENGINEER DISTRICT, LITTLE ROCK  
LITTLE ROCK, ARKANSAS, FEBRUARY 1975





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.

A large, stylized handwritten signature in dark ink, reading "Donald G. Wehnert", is written over the typed name and title.

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