1084

NPS Form 10-900
(Rev. 8-86)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

==========

1. Name of Property

==========

historic name: Remmel Dam

other name/site number: N/A

==========

2. Location

==========

street & number: Remmel Dam Road

not for publication: N/A

city/town: Jones Mill vicinity: X

state: AR county: Hot Spring code: AR 059 zip code: 72104

==========

3. Classification

==========

Ownership of Property: Private

Category of Property: Structure

Number of Resources within Property:

Contributing	Noncontributing	
_____	_____	buildings
_____	_____	sites
1	_____	structures
_____	_____	objects
1	0	Total

Number of contributing resources previously listed in the National Register: N/A

Name of related multiple property listing: N/A

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this __X__ nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property __X__ meets ____ does not meet the National Register Criteria. ____ See continuation sheet.

Cathryn D. Bryford — 7-16-92

Signature of certifying official — Date

Arkansas Historic Preservation Program

State or Federal agency and bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria. ___ See continuation sheet.

Signature of commenting or other official — Date

State or Federal agency and bureau

5. National Park Service Certification

I, hereby certify that this property is:

Entered in the National Register

✓ entered in the National Register — Melanie Byrne — 9/4/92
___ See continuation sheet.

____ determined eligible for the National Register — ____
___ See continuation sheet.

____ determined not eligible for the National Register — ____

____ removed from the National Register — ____

____ other (explain): ____

Signature of Keeper — Date of Action

6. Function or Use

Historic: Industry — Sub: Energy Facility

Current : Industry — Sub: Energy Facility

7. Description

Architectural Classification:

N/A

Other Description: Flat-slab buttress (Ambursen type)

Materials: foundation Concrete roof Asphalt (powerhouse)
walls Concrete other
Brick

Describe present and historic physical appearance. X See continuation sheet.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties: Statewide.

Applicable National Register Criteria: A, C

Criteria Considerations (Exceptions): N/A

Areas of Significance: Industry
Engineering
Entertainment/Recreation

Period(s) of Significance: 1923-1942

Significant Dates: 1924

Significant Person(s): N/A

Cultural Affiliation: N/A

Architect/Builder: Ford, Bacon, and Davis Co.
Ambursen Construction Co.

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.
X See continuation sheet.

Summary

Remmel Dam is a reinforced concrete and steel Ambursen-type flat-slab buttress dam. It is a hollow gravity structure which, in addition to its own weight, utilizes the weight of the lake water bearing down upon its upstream face for stability. The upstream face of the dam is sloped downward into the lake at an approximate 45-degree angle to the horizontal. The upstream face is reinforced concrete slabs 24 inches thick which span the buttress wall sections and act as an impervious water barrier. The weight of the water and the slabs themselves are transmitted by beam action to the individual reinforced concrete buttress walls. These buttresses are integrated into a commonly shared reinforced concrete foundation slab. This type of dam was a design typical of the early 1900's when the additional labor and material costs for the extensive form-work and reinforcement placement were cheaper than the cost of the massive amounts of concrete required for a reinforced concrete solid gravity dam. Remmel Dam forms Lake Catherine, which covers 1900 acres.

Elaboration

Remmel Dam is a reinforced concrete and steel Ambursen-type flat-slab buttress dam. It is a hollow gravity structure which, in addition to its own weight, utilizes the weight of the lake water bearing down upon its upstream face for stability. The upstream face of the dam is sloped downward into the lake at an approximate 45-degree angle to the horizontal. The upstream face is reinforced concrete slabs 24 inches thick which span the buttress wall sections and act as an impervious water barrier. The weight of the water and the slabs themselves are transmitted by beam action to the individual reinforced concrete buttress walls. These buttresses are integrated into a commonly shared reinforced concrete foundation slab. This type of dam was a design typical of the early 1900's when the additional labor and material costs for the extensive form-work and reinforcement placement were cheaper than the cost of the massive amounts of concrete required for a reinforced concrete solid gravity dam.

Remmel Dam's eastern face is the one facing downstream and is the most visible. The southern half of the dam comprises the spillway area. There are 12 spillway gates, each separated by a reinforced concrete buttress wall which extends outward and upward from the spillway slope. At the base of the spillway a reinforced concrete foundation slab extends outward horizontally about 50 feet. At the outer edge of this slab numerous reinforced concrete piers jut back toward the spillway face. These serve to break up and reduce the erosion of the riverbed and thus prevents the erosion of the riverbed underneath the foundation.

The northern half of the downstream face is dominated by the powerhouse, which adjoins the northern end of the spillway and abuts the downstream face. The lower half of the powerhouse structure is of reinforced concrete construction. This lower half contains the penstocks, spiral cases, wicket gates, and turbine wheels and shafts The penstocks are tubes which carry water under pressure to the spiral cases. These are large tubes which wrap around the turbine and direct a uniform flow of water into the turbines. The wicket gates surround the turbine wheels and can be opened and closed to control the amount of waterflow into the turbines.

The upper half of the powerhouse contains the generators, monitoring equipment, workrooms, and other equipment necessary for the generation of electricity. The upper half is constructed of reinforced concrete, brick masonry, steel, and/or glass, except for the north wall, which was originally constructed of wood beams, glass, and galvanized tin. It is now constructed of steel and aluminum siding. The north wall was originally intended to be temporary because additional generating units were planned for installation on the north side. These were never added, and when the original wall began to deteriorate several years ago it was replaced. A series of transformers rest on a reinforced concrete extension outside the east wall of the powerhouse. The original transformers have all been replaced. Originally a transmission substation sat on the roof of the powerhouse, but this has been moved to a spot atop the northern bank of the river near the dam.

The northernmost portion of the dam simply consists of the rear face of the barrier slabs and their buttresses. There is no spillway ramp facing this portion of the dam. At the base of this northern section there runs a large open reinforced concrete channel running alongside the dam from the northern riverbank to the powerhouse. This channel serves as an overtopping spillway that keeps water that may flow over the top of the dam during a severe flood from eroding the riverbank and thus jeopardizing the dam's foundation. It was installed in the mid-1960's due to changes in federal regulations.

The top of the dam is spanned by a walkway that runs from one riverbank to the other. This is an original feature of the dam. The only exterior feature not previously mentioned which is not original is a stairway leading from the top of the dam on the north end down to the powerhouse, where it adjoins a catwalk that runs the length of the powerhouse's north wall. One of the very few features that no longer exists is a stairway tower that led from the north end of the dam down to the bottom of the dam. It was not connected to the powerhouse.

Summary

Remmel Dam's importance in Arkansas' history is several-fold. Its construction was the culmination of the dreams, effort, and persistence of one of the state's pre-eminent businessmen and economic developers, Harvey Couch. It helped key the expansion and survival of one of the state's leading businesses, Arkansas Power and Light Company, during a period fraught with risk for fledgling electric utilities throughout the South. It is also an example of advanced industrial design and engineering that was rare in Arkansas at the time it was built. The lake it created, Lake Catherine, was immediately significant as a recreational resource because of its size and remains so today even though it has since been eclipsed in size by numerous other man-made Arkansas lakes. For these reasons, it is eligible under both Criteria A and C with statewide significance.

Elaboration

Remmel Dam was constructed for Arkansas Power and Light by the Ambursen Construction Company in partnership with the engineering and construction firm of Ford, Bacon, and Davis. Both Ambursen and Ford, Bacon, and Davis were nationally respected firms, and the flat-slab buttress design used in Remmel's construction was patented by Ambursen. Construction was begun early in 1923 and completed near the end of 1924. Because of its isolated location, all construction workers lived on-site in a self-sufficient workers' camp. Electricity for the job site was provided by an AP&L facility in Malvern, a small town a few miles away. At the time it was built the dam and its generating facilities could provide peaking electrical power to AP&L's entire network of customers. Although it is no longer able to serve AP&L's system on that scale, it still provides peaking power when necessary, and is available to serve a potential purpose of the utmost importance: because its generating facilities can be re-started manually, Remmel Dam could serve as the initial re-start point in AP&L's system in case of a power blackout. With respect to the generating facilities, perhaps the most impressive fact about the dam today is that over ninety percent of all the various motors, machines, pumps, gauges, and other equipment necessary to generate electricity are original. In addition, the changes that have been made to the exterior over the years have altered the visual character of the dam minimally, and most of these changes have been necessary technological or regulatory alterations.

The dam's significance in industry and commerce is the result of its relationship to one of Arkansas' most important persons of this century, Harvey Couch, who was one of the state's pioneers in economic and industrial development. Before founding AP&L, which was at the time already Arkansas' largest electric utility,

Couch was a trailblazer in the telephone industry in Arkansas in the 1890's and early 1900's. Later, in the late 1920's and 1930's he became a major force in the railroad industry through his acquisition of the Louisiana and Arkansas and Kansas City Southern railroads. Couch's success in obtaining financing for the dam project and overseeing its successful completion helped to establish respect for Couch in the world of banking and finance, whose support was crucial for the company's as well as the state's economic growth. This was especially significant due to the fact that Couch had to persuade Eastern financiers to back his early projects because Arkansas banks were leery of the risk that electric utilities in the South represented at that time.

Remmel Dam is also important because it established a number of firsts for Arkansas. It was the first electricity-producing facility in the state able to serve a statewide base of customers and helped to significantly lower electrical costs, thus enabling more customers to be connected to the system. It was the state's first hydroelectric dam and the first dam to be constructed entirely of steel and reinforced concrete using sophisticated engineering techniques. It also created Arkansas' first true man-made lake.

That lake, Lake Catherine, named for Couch's only daughter, also contributes to the dam's significance. It serves as an ongoing economic and recreational resource, providing fishing, boating, and other nature-oriented pleasures to thousands of visitors and home-owners on the lake, which translates into millions of dollars pumped into the local economy. The lake created by the dam does not always serve as a source of pleasure, however. The dam and lake were designed primarily for the generation of electricity, not flood control, although they are able to handle most flooding adequately and with a minimum of resulting property damage. But twice since the dam's construction extremely heavy rainfall has created flooding on such a massive scale that water flowed over the top of the dam. The first time was during the great floods of 1927. At that time, development around the lake was virtually nonexistent, and damage was minimal; the second time this sort of flooding occurred was May 19-20, 1990. Due to the massive floodwaters and the high degree of development around the lakeshore, damage to homes, boats, recreational facilities, and even the dam powerhouse amounted to over ten million dollars.

Finally, Remmel Dam is noteworthy also due to its namesake, Harmon L. Remmel. Harmon Remmel was Arkansas' leading Republican of the day and was also prominent in the party on the national level. It was due to Remmel's friendship with Couch, a Democrat, and his influence with the Republican administration of President Calvin Coolidge that Couch was able to receive the necessary federal permits in a manner timely enough to allow him to begin construction almost immediately. If Couch had been delayed by the federal regulatory approval process Remmel Dam might have never been built.

Remmel Dam is eligible under Criterion A with statewide significance by virtue of its associations with both a crucial, early stage in the growth of the Arkansas Power and Light Company -- which then, as now, was the state's largest provider of electricity -- and the creation of Lake Catherine, an historically-important regional recreational lake. It is eligible under Criterion C with statewide significance for its engineering importance as one of the few -- if not the only -- example in the state of an Ambursen-type dam.

9. Major Bibliographical References

_X_ See continuation sheet.

Previous documentation on file (NPS):

_ preliminary determination of individual listing (36 CFR 67) has been requested.
_ previously listed in the National Register
_ previously determined eligible by the National Register
_ designated a National Historic Landmark
_ recorded by Historic American Buildings Survey # _____
_ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data:

_ State historic preservation office
_ Other state agency
_ Federal agency
_ Local government
_ University
_ Other -- Specify Repository: _____

10. Geographical Data

Acreage of Property: Approximately two

UTM References:

	Zone	Easting	Northing		Zone	Easting	Northing
A	15	509750	3809320	B	__	_____	_____
C	__	_____	_____	D	__	_____	_____

___ See continuation sheet.

Verbal Boundary Description: ___ See continuation sheet.

Beginning at a point at the northwest corner of the dam, proceed south 900 feet along the western elevation of the dam. Then proceed east approximately 50 feet to the line formed by the extreme eastern elevation of the dam. Then proceed north 900 feet along this line. Then proceed west to the point of beginning.

Boundary Justification: ___ See continuation sheet.

This boundary includes all of the property historically associated with this resource that retains its integrity.

Bibliography

Wilson, Stephen. Harvey Couch: An Entrepreneur Brings Electricity to Arkansas. Little Rock, AR; 1986, August House.

Interview with Henry Hodge, manager of Remmel Dam Hydroelectric Station, April 5, 1991.

Hot Springs Sentinel Record. December 7, 1924; December 31, 1924; May 22, 190; May 24, 1990; May 25, 1990; June 1, 1990.

Arkansas Gazette, January 1, 1925.

Malvern Daily Record. November 19, 1986.

Other unpublished information provided by Arkansas Power and Light Company's Corporate Communications Department, and Charles Weatherford, Arkansas Power and Light Company's Central Services office.

11. Form Prepared By

Name/Title: Stephen C. Cox, Student: University of Arkansas at Little Rock
Edited by AHPP Staff

Organization: Arkansas Historic Preservation Program Date: 07/15/92

Street & Number: 225 E. Markham, Suite 300 Telephone: (501) 324-9346

City or Town: Little Rock State: AR ZIP: 72201

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Remmel Dam

MULTIPLE NAME:

STATE & COUNTY: ARKANSAS, Hot Spring

DATE RECEIVED: 7/28/92 ~~8/03/92~~ DATE OF PENDING LIST: 8/18/92
DATE OF 16TH DAY: 9/03/92 DATE OF 45TH DAY: 9/17/92
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 92001084

NOMINATOR: STATE

REASONS FOR REVIEW:

APPEAL:	N	DATA PROBLEM:	N	LANDSCAPE:	N	LESS THAN 50 YEARS:	N
OTHER:	N	PDIL:	N	PERIOD:	N	PROGRAM UNAPPROVED:	N
REQUEST:	N	SAMPLE:	N	SLR DRAFT:	N	NATIONAL:	N

COMMENT WAIVER: N

✓ ACCEPT ___RETURN ___REJECT 9/4/92 DATE Entered in the National Register

ABSTRACT/SUMMARY COMMENTS:

RECOM./CRITERIA_____
REVIEWER_____
DISCIPLINE_____
DATE_____

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

CLASSIFICATION

___count ___resource type

STATE/FEDERAL AGENCY CERTIFICATION

FUNCTION

___historic ___current

DESCRIPTION

___architectural classification
___materials
___descriptive text

SIGNIFICANCE

Period Areas of Significance--Check and justify below

Specific dates Builder/Architect
Statement of Significance (in one paragraph)

___summary paragraph
___completeness
___clarity
___applicable criteria
___justification of areas checked
___relating significance to the resource
___context
___relationship of integrity to significance
___justification of exception
___other

BIBLIOGRAPHY

GEOGRAPHICAL DATA

___acreage ___verbal boundary description
___UTMs ___boundary justification

ACCOMPANYING DOCUMENTATION/PRESENTATION

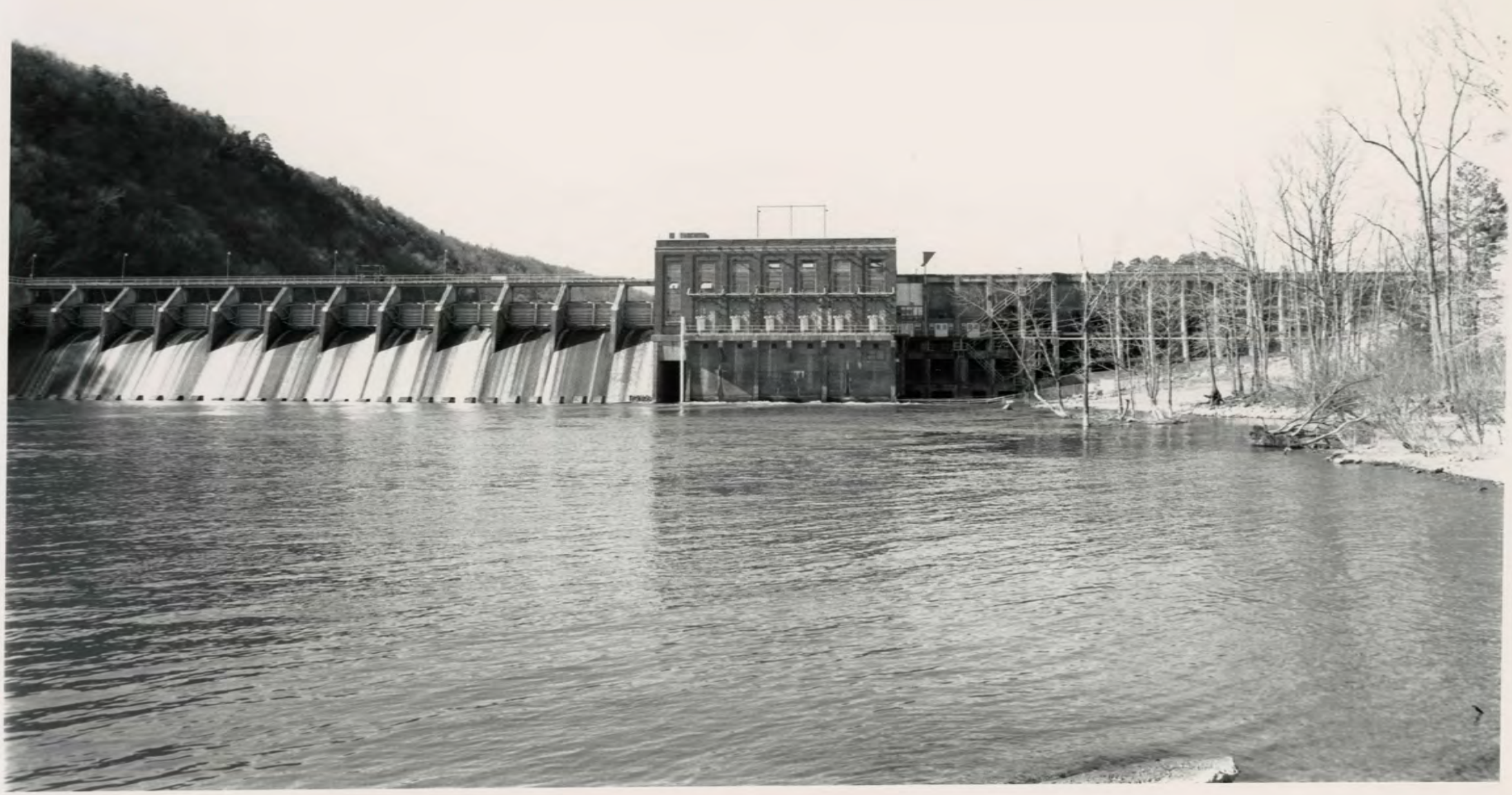
___sketch maps ___USGS maps ___photographs ___presentation

OTHER COMMENTS

Questions concerning this nomination may be directed to

_____ Phone _____

Signed _____ Date _____



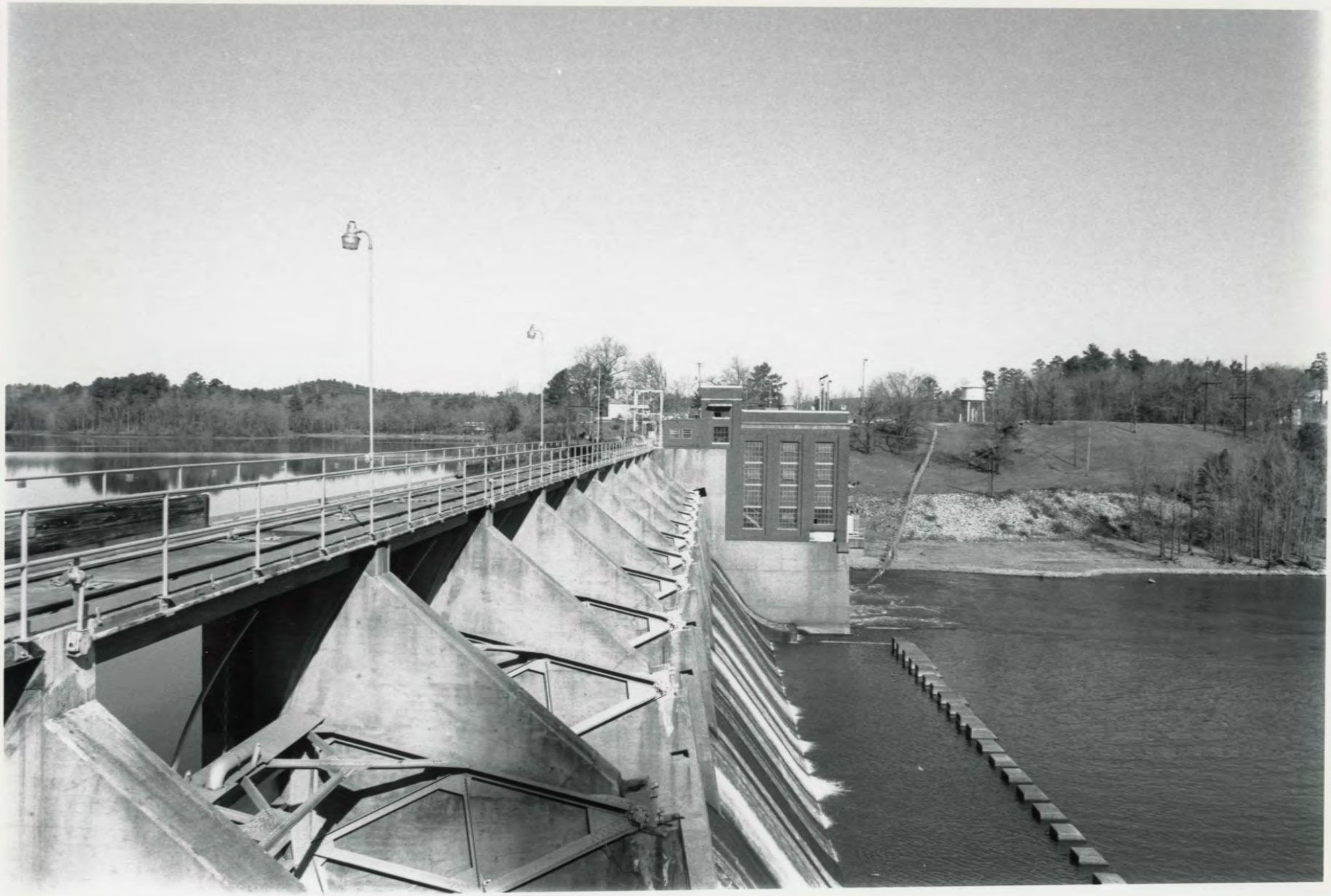
Remmel Dam, Hot Spring Co.
Jones Mill vic., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View from the east

Remmel Dam. Hot Spring Co.
Jones Mill vic., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View of tainter gates from the east


REMMEL DAM AND POWER STATION
900 FEET LONG NORMAL HEAD 50 FEET
ULTIMATE CAPACITY 25,000 HORSE POWER
FIRST OF A SERIES OF DAMS ON THE
OUACHITA RIVER TO DEVELOP 320 FEET TOTAL HEAD
AND 150,000 TOTAL HORSE POWER
THE DEVELOPMENT OF THIS POWER IS DUE
TO THE FORSIGHT AND PUBLIC SPIRIT OF
H.C. COUCH AND HIS ASSOCIATES.
W. NOEL ADAMS
H. M. ARMISTEAD
B. S. ATKINSON
W. E. BAKER
JULIAN G. BLASS
GEORGE H. CAHOONE
J. E. CALLAWAY
C. H. CAMPBELL
F. J. CARPENTER
FRANK P. COMSTOCK
C. P. COUCH
WM. CROOKS
V. M. DAVIS
GEORGE W. DONAGHEY
MICHAEL F. DOOLEY
JOHN R. FORDYCE
L. GARRETT
DAVID A. GATES
J. L. LONCINO
C. S. LYNCH
C. J. MANSFIELD
C. S. Mc CAIN
W. ROSS Mc CAIN
J. H. MEEK
T. O. MOLONEY
C. H. MOSES
L. R. MYERS
W. H. NOLKER
H. L. REMMEL
W. C. RIBENACK
Q. C. SHORES
E. L. SMITH
GUSTAVUS TAYLOR
A. G. WHIDDEN
J. D. WHITLOW
F. M. WILKES
CONSTRUCTED BY
AMBURSEN CONSTRUCTION COMPANY
W. CHRISTOFFERSON, CONST. SUPT.
UNDER DIRECTION OF
FORD, BACON & DAVIS, INCORPORATED
G. I. RHODES, VICE PRESIDENT
F. J. TRELEASE, RESIDENT ENGINEER
AGENTS FOR
ARKANSAS LIGHT & POWER COMPANY
H.C. COUCH, PRESIDENT
J. L. LONCINO, VICE PRESIDENT
L. GARRETT, SECRETARY.
1924

Remmel Dam, Hot Spring Co.
Jones Mill vic., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View of plaque

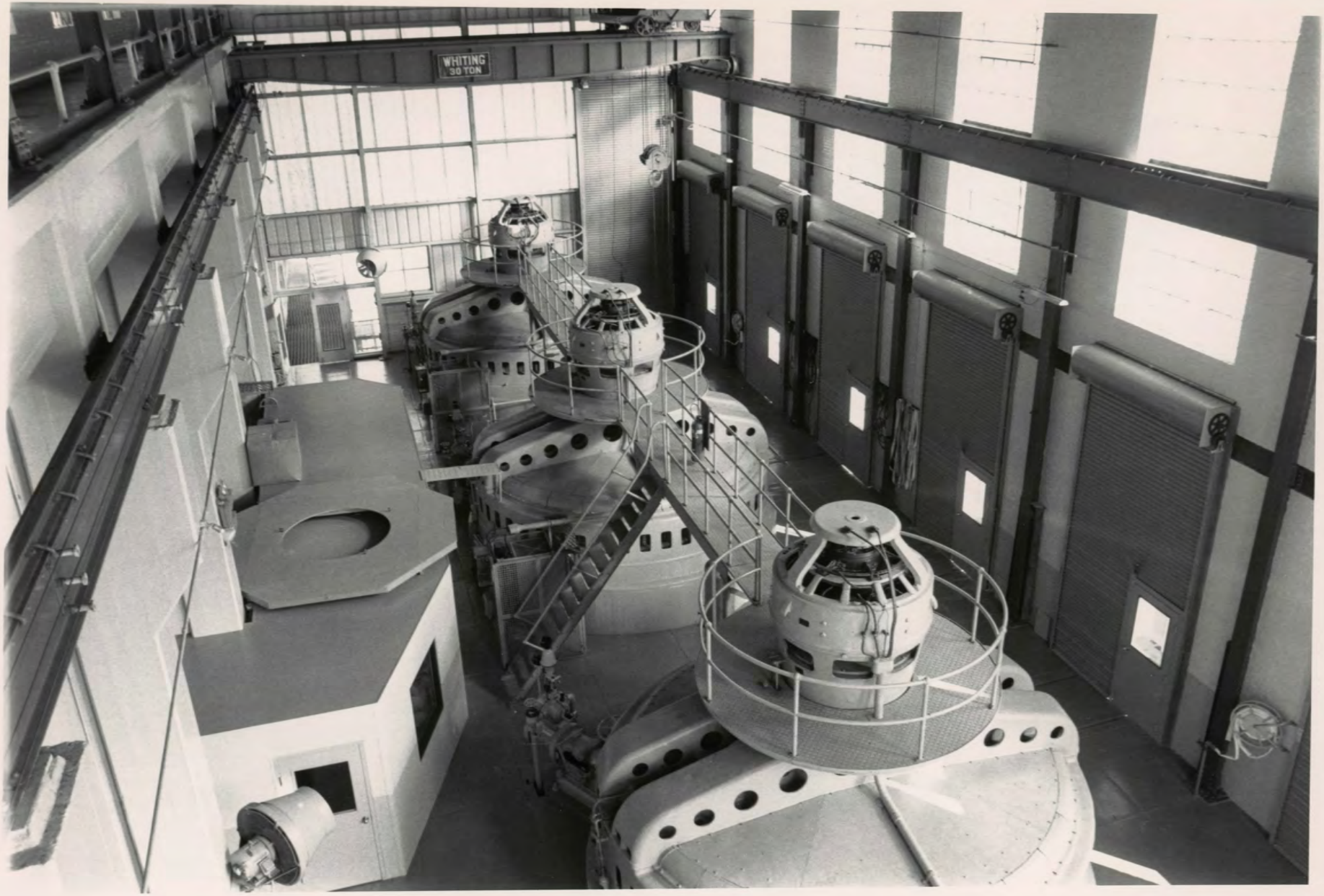
Remmel Dam Hot Spring Co.
Jones Mill vic., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View of control room



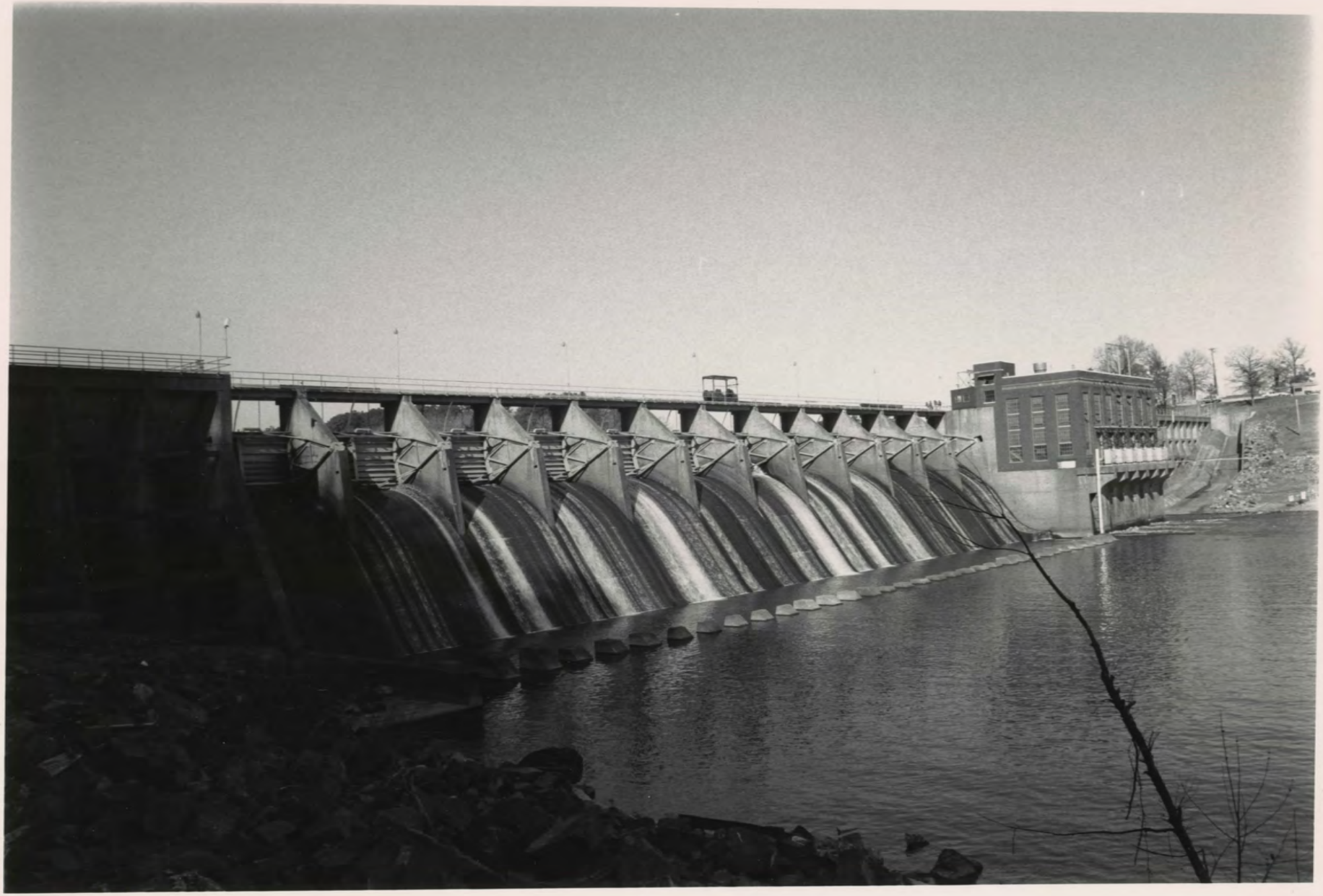
Remmel Dam, Hot Spring Co.
Jones Mill vic., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View from the south

Remmel Dam
Hot Spring Co., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View from the northeast

Remmel Dam
Hot Spring Co., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View of powerhouse from the
Southwest


WHITING
30 TON

Remmel Dam
Hot Spring Co., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View of interior of powerhouse
from the south



Remmel Dam
Hot Spring Co., Arkansas
Photographed by Patrick Zollner
January 1992
Negative on file at AHPP
View from the southeast

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF ARKANSAS
GEOLOGICAL COMMISSION
LITTLE ROCK

LAKE CATHERINE QUADRANGLE
ARKANSAS
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW/4 MALVERN 15' QUADRANGLE

7453 III SE (HOT SPRINGS NORTH) · 7453 III SW (FOUNTAIN LAKE) · 7453 III NE (LONSDALE)

93°00′ · 34°30′ · 92°52′30″ · 34°22′30″

R 19 W · R 18 W · R 17 W

1 730 000 FEET · 660 000 FEET · 630 000 FEET

0.3 MI. TO U.S. 70 · 4 MI. TO U.S. 70 · 4 MI. TO U.S. 270 · 2.2 MI. TO INTERSTATE 30 & ARC. 84 · 8 MI. TO ARK. 7

7350 I NE (HOT SPRINGS SOUTH) · 7352 I SE (DE ROCHE) · 7452 IV SW (SOCIAL HILL) · 7452 IV SE (MALVERN SOUTH) · 7452 IV NE (MALVERN NORTH)

MAGNET 7.8 MI. MALVERN 10 MI.

T3S · T4S

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1976. Map edited 1978

Projection and 10,000-foot grid ticks: Arkansas coordinate system, south zone (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 15
1927 North American datum

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

1 MILE · 1000 0 1000 2000 3000 4000 5000 6000 7000 FEET · 1 KILOMETER

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND ARKANSAS GEOLOGICAL COMMISSION, LITTLE ROCK, ARKANSAS 72204
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route · U. S. Route · State Route

LAKE CATHERINE, ARK.
NW/4 MALVERN 15' QUADRANGLE
N3422.5–W9252.5/7.5

1978

AMS 7452 IV NW–SERIES V884

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1979

Remmel Dam
Jones Mill vic., Arkansas
UTM: 15/509750/3809320

ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

July 16, 1992

Carol D. Shull
Chief of Registration
United States Department of the Interior
National Register of Historic Places
National Park Service
1100 "L" Street, NW
Washington, DC 20240

RE: Remmel Dam
Hot Spring County, AR

Dear Carol:

We are enclosing for your review the nomination of the above referenced property. The Arkansas Historic Preservation Program has complied with all applicable nominating procedures and notification requirements in the nomination process.

Thank you for your consideration in this matter.

Sincerely,

Cathy Buford
State Historic Preservation Officer

CB:kg

Enclosures

Suite 200 • 225 East Markham • Little Rock, Arkansas, 72201 • Phone (501) 324-9346
A Division of the Department of Arkansas Heritage